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ABSTRACT

This analysis of Federal impacts on the urban residential sector focuses on: (1) the influence of Federal programs and policies on intermetropolitan population movements (migration from the North to the sunbelt); and (2) program and policy influences on the process of suburbanization (the flight of the affluent from central cities). Considered are Federal actions that impinge directly upon residential location decisions, as well as those which act indirectly, having their initial effects on local fiscal and economic development. Recent trends in population growth among urban areas and in population suburbanization are described. Numerous factors influencing migration and suburbanization are discussed, including local labor market conditions, environmental factors, changes in accessibility and differences in amenities and public services between cities and suburbs, and Federal policies regarding transportation programs, highway construction, housing subsidies, discrimination, and local level government. An extensive bibliography is provided. (Author/EB)

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The Urban Impacts of Federal Policies:

Vol. 4, Population and Residential Location

Roger J. Vaughan

Mary E. Vogel

Prepared under Grants from the
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PREFACE

This is one of a series of reports on a Rand Corporation study of the urban impact of federal policies. The purposes of the study are to establish a conceptual framework for assessing the effects of federal actions on urban areas, to synthesize the findings of existing research regarding the effects of specific federal policies on urban conditions, and to evaluate the adequacy of existing knowledge as a basis for anticipating the effects of future federal decisions on urban areas.

The organizing principle for this research has been to examine three major sectors of the urban economy that are affected by federal actions: the private business sector, the residential sector, and the local public sector. This report presents our findings about the effects of federal policies on the residential sector. Our research on the business and local public sectors is presented in two companion documents:

> Roger J. Vaughan, *The Urban Impacts of Federal Policies: Vol. 2, Economic Development*, R-2028-KF/RC; and Stephen M. Barro, *The Urban Impacts of Federal Policies: Vol. 3, Fiscal Conditions*, R-2114-KF/HEW.

The findings of these three reports are summarized and integrated in a fourth report:

> Roger J. Vaughan, *The Urban Impacts of Federal Policies: Vol. 1, Overview*, R-2206-KF/HEW.

The intended audience for these four reports includes federal policymakers and their staffs; state and local government officials; and those interested in understanding, anticipating, or influencing federal policy decisions having consequences for urban areas. The three sectoral reports have been conceived of as resource documents reviewing evidence from the literature. They should also be useful to researchers in urban economics and related fields and to public and private agencies that sponsor research on urban problems. The fourth report in the series, the integrative report, is less technical and detailed than the others. It has been prepared to make the results of this study available to a wider audience of public officials and those concerned with urban affairs.

The research reported on here and in the other three documents was conducted under a grant from the Charles F. Kettering Foundation, with supplementary financial support from funds provided by the Department of Health, Education, and Welfare.

SUMMARY

This report examines how federal programs and policies have influenced urban population distribution, both among metropolitan areas and between central cities and suburbs.[1] For several decades jobs and people have been moving away from areas of traditional concentration—the Northeast, large metropolitan areas, and central cities—and toward newer, less developed areas—the South and West, small urban areas, and suburbs. More and more observers have argued that deconcentration has been aided, often inadvertently, by federal policies.

Many federal policies could, conceivably, influence cities; there are many avenues through which such influence could be exercised and many outcomes that could reflect federal policy impacts. Therefore, this study has two goals: (1) to develop a conceptual framework that systematically documents the links between federal actions and urban outcomes; and (2) to synthesize what is known about these relationships from a review of the literature.

Although individual parts of the deconcentration process are well understood—how the automobile has encouraged sprawling suburbs, how rising incomes have led to the construction of single family homes—the role of federal policies has been almost ignored. Yet we must identify how federal, state, and local government actions have affected population location decisions to define the policy levers available for a federal urban strategy.

THE CONCEPTUAL FRAMEWORK

The first step in developing the conceptual framework was to disaggregate the city into three distinct but interdependent sectors—the residential sector, the business sector, and the local public sector. Each is inhabited by a separate decision-making unit—the household, the firm, and the local government. Each determines a different set of urban outcomes and responds to different factors and federal policies, as well as to the actions of the other two sectors. Federal policies act *directly* on residential location through influencing household decisions and *indirectly* through inducing changes in the business sector and the local public sector that affect residential location.[2]

The relationship between households and federal policies is defined in three steps. First, we have identified the variables that measure the policies' outcomes—the level and rate of growth of metropolitan populations, their distribution between central city and suburb, and their socioeconomic characteristics. Recent trends in these outcome variables are described to provide a context against which to assess the contribution of federal policies.

The second step identifies the determinants of both intermetropolitan and intrametropolitan residential location, including transportation facilities, amenities, employment opportunities, and local taxes and public services.

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[1] The term "programs and policies" is used throughout this report to encompass all federal expenditures, programs, taxes, subsidies, regulations, and other activities that directly or indirectly affect residential location decisions. It is not limited to explicit housing or urban programs.

[2] The indirect influences of federal policies on the private business and public sectors are discussed in two companion reports. See Vaughan (1977) and Barro (1978).

Finally, federal policies that act upon the location-determining factors are identified and their influences assessed.

Completing these three steps has involved the review of hundreds of studies of widely differing quality, scope, and analytic technique. In some cases a clear consensus emerges and can be documented. In other cases, we could only arbitrate among conflicting findings based upon our judgment of the quality of the report. In still other cases, there is no relevant research and we are able only to suggest the possible direction and magnitude of the influence based upon a priori theoretical considerations or circumstantial evidence. Further theoretical and empirical research is needed to determine the accuracy of these conclusions.

No new data are presented and no new empirical analyses have been undertaken. The emphasis is on synthesizing findings from earlier work.

INTERURBAN RESIDENTIAL LOCATION

An examination of recent patterns of urban population distribution reveals several significant trends. First, since the late 1960s, metropolitan population has grown more slowly than the nation as a whole, reversing a long trend toward increasing population concentration in metropolitan areas. There is now a positive net migration flow toward nonmetropolitan counties both from central cities and from suburbs.

Second, the national slowdown in population growth, from about 1.5 percent annually between 1960 and 1970 to about 0.8 percent annually since 1970, has been reflected more sharply in large metropolitan areas than in smaller ones. SMSAs with population less than 250,000 experienced an increase in growth rate after 1970. One-sixth of all SMSAs, housing one-third of metropolitan residents, have ceased to grow.

Third, the shrinking or slowly growing metropolitan areas are concentrated in the Northeast and Midwest. Rapidly growing cities are located in the South and West.

Fourth, average family size is shrinking. Fewer families are having large numbers of children. The numbers of households with no children are growing much faster than those with children and are now the majority of all households.

Finally, the patterns of migration that to a large extent determine metropolitan growth rates have changed recently. The net inflow of poor black migrants from the South into the major metropolitan areas in the North has ceased. The North now experiences net outmigration of well-educated and white households.

Determinants of Metropolitan Growth

What determines migration patterns? Why have some cities grown rapidly while others have lost population? Migrants have been most strongly influenced by local economic conditions, although they have also tended to move away from high taxing jurisdictions and toward areas offering clean air, warm climates, and attractive recreational amenities.

Economic Conditions. Growing employment opportunities, low unemployment rates, high wages, and high job turnover rates attract migrants. Half of the jobs created in a labor market area will be filled by newly arrived workers. At the same time, population growth attracts jobs; firms invest to take advantage of a growing labor supply and consumer demand. Within this interdependent system, exogenous factors—including amenities and climate—apparently explain a larger share of population growth than of employment growth. Therefore, economic development is more heavily dependent upon the expansion of population through previous inmigration than inmigration is on the previous expansion of job opportunities.

The Local Public Sector. High outlays for public services generally encourage inmigration and discourage outmigration. Jurisdictions offering high welfare benefits have also experienced a growing concentration of minority and poor households. However, this has arisen less from high rates of inmigration among welfare seekers than from low rates of outmigration among those who are forced to rely on welfare.

Affluent migrants tend to move to cities where local taxes are fairly low. Poor (frequently minority) households are much less sensitive to local tax rates in selecting their destination, perhaps because of the high level of redistributive services associated with the high tax levels.

Amenities. The attractiveness of an area also influences migration. A city with a warm climate and clean air will attract more inmigrants than other cities, and at a lower wage rate. Low wages encourage economic development and, therefore, lead to further inmigration. Past migration patterns are also influential as information networks develop that attract new migrants. Smaller metropolitan areas are also more attractive than larger ones, although easy access to a nearby large SMSA is desirable.

Influence of Federal Policies on Migration

The most important federal influences on migration have been through policies supporting regional differences in economic growth and through such federally supported income transfer programs as Aid to Families with Dependent Children and Social Security.

Economic Conditions. Federal policies have encouraged the rapid growth of employment in the South and West at the expense of the Northeast, and in newer, smaller metropolitan areas at the expense of older, larger ones. This consistent direction of influence, often inadvertent, has been the result of policies favoring growth and new development over rehabilitation and repair. The bias extends from expenditure policies and the federal tax structure to regulatory activities. Firms in growing areas have received federally subsidized new infrastructure and tax breaks, allowing rapid expansion. Firms have moved away from older areas to take advantage of these growth incentives.

The most obvious assistance has been through two major public works programs: first, the interstate highway system, which involved substantial subsidies from the Northeast to the South and West and without which many smaller metropolitan areas in the South would have remained inaccessible; and second, massive Corps of Engineers projects that opened many southern cities to the benefits of international trade. The growth of defense payrolls and contracts in the sunbelt also spurred economic development. For these programs, local economic development was an intended, if secondary, goal.

Aspects of the tax structure, although uniformly applied nationwide, have reinforced underlying trends even when no spatial differentiation was intended. Investment in new construction has traditionally been allowed more generous tax deductions than comparable investment in rehabilitation. Tax reform in 1976 reduced this differential. Exemption of industrial development bonds from federal income tax reduces the local cost of infrastructure necessary for new expansion. Investment tax credits subsidize expansion in growing areas where most investment is already underway.

There is evidence that federal regulations unwittingly affect the distribution of employment. For example, regulation of interstate prices of natural gas curtails supplies in nonproducing states, encouraging users to move to areas where supplies can be guaranteed, even if at a higher price. Freight transportation rate and route regulation favor employment deconcentration by raising the cost of long haul relative to short haul transport. Transportation cost differentials are caused by umbrella pricing policies pursued by the Interstate Commerce Commission and from the cross subsidization from busy to less used routes.

Transfer Payments. The expansion of federal income transfer programs, both in the level of payments and in the extent of coverage, have also been influential. Redistribution of tax revenues from the high income areas in the Northeast to lower income areas has raised purchasing power and therefore the support for economic growth in poorer areas. In addition, the mobility of the aged has been enhanced by the increases in retirement benefits, leading to population growth in attractive environments for the aged such as Florida and Arizona. Finally, the absence of a uniform federal welfare system has led to the concentration of dependent populations in cities and states that offer high levels of benefits.

Amenities. We have little or no documentation of the importance of federal programs that influence amenities. However, such programs as the National Park Service and the Corps of Engineers have provided recreational projects mainly in the South and West, enhancing those regions as places to live.

SUBURBANIZATION

The nation's urban population has become predominantly suburban. In all regions, suburban population growth has exceeded that in central cities. The disparity has been greatest in the South and least in the West. Population densities have declined sharply in many central cities, reflecting population decline, and urban land area has increased at four times the rate of urban population since World War II.

Suburbanization has been highly selective. The problems facing cities result less from population and economic decline than from the growing concentration of the poor and minorities in central cities. High income white households have moved to the suburbs leaving poor households in the central city. The difference between central city and suburban incomes is most pronounced in the Northeast and in large metropolitan areas. Central cities in the South and the West have been able to recapture some population loss by annexation of their suburbs, an option not available to most large northeastern cities. Consequently, central cities face high per capita demands for expenditures on social services and a low per capita tax base. Suburbs, generally, enjoy much more favorable fiscal conditions.

Determinants of Suburbanization

Five factors account for much of the movement of households from central cities into suburbs: Transportation improvements have allowed them to do so without sacrificing accessibility to downtown employment and shopping, rising incomes have stimulated the demand for single family homes, jobs have moved to the suburbs, suburbs offer an escape from many of the unattractive aspects of city life, and suburbs offer lower tax rates and better quality public services than central cities.

Access. Cities grew up around industrial centers. The desire to live close to work resulted in high land prices in city centers and was reflected in high residential densities at the city center.

Over time the premium paid for accessibility has declined, resulting in a parallel decline in densities. The most important factor in the spreading of the city is the automobile, which reduces commuting costs per mile and allows commuters to live away from the city center. The secular growth in real income is the second most important factor in suburbanization, because higher incomes allow households to purchase rather than rent, a transition that usually involves a move to the suburbs where land is cheaper. However, some upper income families, especially those with two wage earners, desire access more than space and tend to live closer to the city center. Finally, the suburbanization of people has been aided and abetted by the surbanization of jobs. Contrary to the popular view, however, businesses generally appear to be led by households in this process, although the desire for easy freeway access and the preference for land-intensive, single-story manufacturing plants have favored expansion in the suburbs rather than in central cities.

Amenities. In many ways, the central city is a less attractive place to live than the suburbs. It is noisier, experiences more severe air pollution, has less access to recreation facilities, and suffers higher crime rates. For many of these factors, the larger the city, the more severe the problem.

Conflicts in empirical results and differences in research techniques prevent a direct estimation of either the relative importance of different amenities or the overall importance of the quality of the residential environment in the process of suburbanization. Living in the suburbs may be valued at several hundred dollars more than living in the central city because of cleaner air, prevailing quiet, more plentiful recreational facilities, and lower crime. But the suburban advantage is eroding. The deconcentration of industry disperses air pollution and increases suburban traffic congestion, and crime rates have climbed faster in suburbs than in many central cities.

Taxes and Local Public Services. Suburbs typically offer lower local tax rates and better quality public services. High-income households have sought socioeconomically homogeneous suburban jurisdictions to avoid paying for locally financed public services that redistribute resources to the poor. The pursuit of residential locations that offer high quality public services at an attractive tax price leads to social stratification, jurisdictional fragmentation, and urban sprawl. Zoning ordinances that dictate a minimum lot size for local and residential property and high property values effectively prevent low-income households from moving into the more affluent suburbs.

High local tax rates and poor quality of local public services depress property values and erode the local tax base. In the rental market, high taxes are only partially passed on in rent increases, but they deter property improvement or maintenance. The outmigration of affluent households, which necessitates an increase in the tax rate on those remaining, therefore sets in motion a downward spiral. Neighborhoods in the process of decline face higher effective property tax rates than stable or upward transitional neighborhoods.

Influence of Federal Policies

The suburbanization of the most affluent metropolitan households is aided, usually inadvertently, by many federal policies. Most important is the array of housing programs that combine to subsidize the affluent to move to suburban single family housing and the poor to stay in the central city. Transportation programs have also shaped metropolitan development, as have programs that have suburbanized employment opportunities.

Housing Policies. The federal income tax structure encourages homeownership by allowing the tax deduction of interest and local tax payments and by not taxing the value of imputed rent from owner occupied housing. The benefits are greatest for those families in the highest tax brackets. Homeownership typically means moving from central city rental property to a single family house in the suburbs.

The tax structure subsidizes new residential construction at the expense of maintenance and rehabilitation. Mortgage subsidy and guarantee programs, instituted to help low-income families own homes, have usually applied only to new housing, so that families meeting program requirements move to new developments in the suburbs, leaving poorer families behind. Suburban residential development is subsidized by federal grants for water and sewer systems, public roads, and electrification.

Public housing programs shelter the very poor and have typically been undertaken in central cities. Building and housing codes have also contributed to the confinement of the poor in the inner city. Federal building codes discourage the construction of new low-cost housing, forcing the poor to occupy older, cheaper housing, most of which is located in the central city. Homeownership programs for the very poor place limits on the value of homes, excluding them from suburban housing.

Transportation Policies. Federal commitment to highway construction has extended suburban rings. The rise of automobile commuting and the demise of mass transit has made automobile ownership a requisite for suburban living, confining the poor to central areas served by public transportation. The extent to which Urban Mass Transit Administration operating grants will lead to broadly improved public transport and therefore extend the metropolitan radius of accessibility for the poor is, as yet, uncertain. The formula for distributing these grants favors small metropolitan areas.

Suburbanization of Jobs. Many of the policies leading to the regional deconcentration of employment also encourage rapid growth of employment in suburban and nonmetropolitan areas and the movement of firms out of central cities. Again the basic mechanism has been the subsidy of new development. Grants for sewers and roads have reduced the cost of preparing industrial land. The tax structure has provided incentives to firms to move where land is cheap. When computing tax liabilities, firms cannot treat land as a depreciable asset, so they try to locate where land prices are low but expected to rise. This decision is reinforced by the favorable treatment of capital gains relative to corporate income in the business tax code.

Federal regulation policies may also have helped suburbanization. Freight pricing policies have contributed to the decline of the railroad (a major attraction of central cities), and many older and more congested central cities find it difficult to accommodate the rise of trucking. Firms in many older cities also face special difficulties in complying with environmental and safety regulations. For example, cities have had to institute air pollution programs and increase bridge tolls to encourage car pooling. New industrial equipment may be modified at less cost than older equipment, so established industrial centers are at a disadvantage relative to growth areas.

Amenities. Federal policies influence amenities in a number of ways: The Environmental Protection Agency requires local programs to combat air, water, and noise pollution; the Law Enforcement Assistance Administration provides funds and technical assistance to local police forces; the National Park Service has provided recreational facilities; and the National Endowment for the Arts provides grants to local museums and theaters. However, we do not know how these policies affect the relative attractiveness of cities and suburbs.

Local Public Sector. Federal activities have a pervasive influence on local public sector behavior, although the extent to which they indirectly influence residential location is unclear. Before 1976, federal grants-in-aid traditionally favored low income southern cities at the expense of high income northern cities through either the allocation formulas or the type of projects funded. This has since been reversed. Favored cities are able to keep down the local tax price of local public services.

The federal government attempts to enforce racial and economic integration of housing and schooling by withholding funds from local authorities that do not comply and by direct legal action. It is still too early to determine the effects of residential integration measures. There is some evidence, however, that school desegregation through forced busing actually exacerbates segregation by precipitating the flight of white households to suburban areas. Understanding the scale and duration of this white flight must await the results of research that is now underway.

The overriding conclusion of this report is that federal policies have contributed and continue to contribute to the urban crisis. They have reinforced regional and urban population deconcentration and the growing concentration of the economically and socially disadvantaged in central cities (Table S.1). These are not the desired outcomes of social policies but have arisen inadvertently because federal programs tend to encourage new development at the expense of maintenance or redevelopment and to aid the disadvantaged where they live. Many of the factors that have contributed to the central city problems are out of the hands of local governments and are embedded in the structure of federal programs and policies. A federal strategy to assist cities in becoming healthier business and residential centers must embrace not only explicitly urban programs but the complex web of social and economic policies that have affected location decisions.

Table S.1

SUMMARY OF THE INFLUENCE OF MAJOR FEDERAL POLICIES ON POPULATION AND RESIDENTIAL LOCATION

Policy	Intermetropolitan	Suburbanization	Segregation
Highway construction	Subsidy from Northeast to South. Mountain and West. Favored smaller SMSAs and areas of lower population concentration.	Encouraged reduced residential density and nonmetropolitan growth.	Suburbs open only to those with automobiles.
Mass transit	Favored smaller cities.	Small encouragement to decentralization.	Too small to allow low income suburbanization.
Federal recreation facilities	Concentrated in West and South.	Negligible acreage in inner city.	
Income transfer payments	Reduced incidence of poverty and encouraged migration of aged to Sunbelt.		
Housing policies:			
Tax structure		Encouraged suburbanization and favored new construction.	Led to suburbanization of high and middle income households.
Mortgage guarantees		Encouraged suburbanization and favored new construction.	Led to suburbanization of high and middle income households.
Public housing			Concentrated in inner city.
Building codes			Prevented construction of low cost new housing in suburbs.
Homeownership programs for poor			Concentrated in inner city.
Infrastructure grants	Reduced development costs in growth areas.	Reduced cost of suburban development.	

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[1] The positions held by advisory group members are those held during 1975 and are not necessarily their present positions.

CONTENTS

PREFACE iii
SUMMARY v
ACKNOWLEDGMENTS xiii
TABLES xvii
FIGURES xix

Section
I. INTRODUCTION 1
  Urban Problems from a National Perspective 1
  Parameters of Federal Urban Policy 2
  The Urban Impacts Study 4
  The Scope and Organization of this Report 5
  Limitations 5

II. CONCEPTUAL FRAMEWORK 7
  The Unit of Analysis 7
  Three Sector Breakdown 8
  Outcomes, Determinants, and Policies 9

III. RECENT TRENDS IN INTERMETROPOLITAN POPULATION DISTRIBUTION 14
  National Population Growth and Household Formation 14
  Regional Population Growth 14
  Growth by Type of Urban Area 16
  Nonmetropolitan Growth 18

IV. EXPLAINING INTERMETROPOLITAN MIGRATION 21
  Theory of Migration 21
  Factors Affecting Migration 26
  Amenities 33
  Summary 34

V. FEDERAL POLICIES AFFECTING MIGRATION 35
  The Effects of Federal Policies on Local Economic Conditions 35
  The Effects of Federal Policies on Transfer Payments, Local Expenditures, and Local Taxes 37
  The Effects of Federal Policies on Amenities 42
  The Direct Effects of Federal Policies on Migration 43

VI. RECENT TRENDS IN SUBURBANIZATION 44
  Metropolitan Decentralization 44
  Population Characteristics 46

14

VII. EXPLAINING SUBURBANIZATION 52
Accessibility and Income 52
Amenities 61
Local Public Services and Local Taxes 73
Summary 82

VIII. FEDERAL POLICIES AFFECTING SUBURBANIZATION 85
The Effects of Federal Housing Policies 85
The Effects of Federal Policies on Accessibility 93
The Effects of Federal Policies on Amenities 98
The Effects of Federal Policies on the Local Public Sector 102
Summary 107

IX. OVERVIEW AND CONCLUSIONS 108
Conclusions 109
Research Needs 110

BIBLIOGRAPHY 113

INDEX 131

TABLES

S.1. Summary of the Influence of Major Federal Policies on Population and Residential Location xii
1. Distribution of Population by Census Division, Percent Shares, 1920-1970 15
2. The Ten Fastest and Slowest Growing Large Cities, 1970-1975 ... 18
3. Components of Population Change for Groups of Metropolitan and Nonmetropolitan Counties, 1960-1970 and 1970-1973 20
4. Annual Mobility of the Male Population 14 Years and Over, by Employment Status, March 1969 Through March 1970 28
5. U.S. Transfer Payments and Total Personal Income, 1965, 1970, 1975 39
6. Per Capita Federal Income Transfer Payments by Region, FY1975, and Federal and Local Welfare Payments, FY1976....... 40
7. Per Capita Amounts of the Major Sources of State and Local General Revenue, 1975 41
8. Percent Distribution of Population by Residence, 1950-1973 44
9. Population Change Between 1970 and 1974 by Residence......... 45
10. Gross Residential Densities, Population, and Area in all U.S. Urbanized Areas, 1950-1970........ 45
11. Percent Change in Population of Central Cities Through Annexation: By Region 1960-1970 46
12. Percent Population Below Poverty Level by Race and Place of Residence, 1975 47
13. Percent Population Change in Metropolitan Areas, 1960 to 1970, Inside and Outside Central City by Race and Size of SMSA 48
14. Measures of Tax Effort in Central Cities and Suburbs in 22 Largest SMSAs, 1962........ 49
15. Local Government Direct Expenditure and Intergovernmental Growth by Budget Function, FY1974........ 50
16. Per Capita Revenues and Expenditures of City Governments by Population Size, 1972-1973........ 51
17. Fiscal Conditions in Growing and Declining Cities, 1965.......... 51
18. Metropolitan U.S. Auto/Household Ratio and Percentage Distribution of Regular Trips by Type of Metropolitan Environs, 1965........ 58
19. Summary of Value of Time Studies 60
20. Percent of Households Affected by Undesirable Neighborhood Characteristics, Inside and Outside Central City, 1974............ 63
21. Daytime Residual Neighborhood Noise Level L_{90}) by Type of Location, in dBA 64
22. Summary of Studies Relating Traffic Noise to Property Values ... 65
23. Summary of Studies Relating Aircraft Noise Pollution to Property Values........ 66

16

24. Air Pollution Concentrations by SMSA Size 67
25. Summary of Property Value Studies 69
26. Summary of Studies Relating Property Values and Open Space ... 70
27. Total Crime Rates per 100,000 Inhabitants and Percent Change in 30 Largest Cities and Their Suburbs, 1964 and 1974 72
28. Median Effective Tax Rates for Sample Properties by Neighborhood and City for Selected Cities, 1970 80
29. Relative Costs and Benefits of Amenities at Central City and Suburban Residential Locations 83
30. Allocation of Section 5 Funds Per Rider and Passenger Mile, by Size of Urban Area, FY1975 and 1976 96
31. Direct Federal Involvement in Amenities 99
32. Direct Federal Aid as a Percent of Own Source General Revenue, Selected Cities and Fiscal Years, 1957-1978 104
33. Summary of the Influence of Major Federal Policies on Population and Residential Location 109

FIGURES

1. Conceptual Framework 9
2. Determinants of and Federal Policies Influencing Intermetropolitan Migration 11
3. Determinants of and Federal Policies Influencing Suburbanization 12
4. Patterns of Migration 16
5. Per Capita Personal Income as Percent of U.S. Average, by Region, 1929 to 1975 17
6. Distribution of U.S. Population by Size of Urban Area, 1950 and 1970 19
7. Migration Between Types of Areas, 1970-74 19
8. The Interaction Between Population and Employment Growth 29
9. Inhibitors to Parcel Maintenance and Improvements by Tax Arrearage 82
10. Homeownership Rates by Household Income in 1940 and 1960 and Estimated 1960 Homeownership that Would have Prevailed in the Absence of FHA/VA Mortgage Insurance Programs 87
11. Transportation, Business and Residential Location, and Federal Policies 94

I. INTRODUCTION

Many of the nation's urban areas have declining populations. Households have left larger cities in favor of suburbs, smaller cities, and even nonmetropolitan areas. Many have moved to urban areas in the rapidly growing sunbelt states. Population decline and economic stagnation have fed on each other in the Northeast, impairing the quality of life of those remaining and leaving local governments having to provide public services for an increasingly dependent population from a dwindling tax base. There is increasing awareness that population loss, job loss, and fiscal weakness are interwoven aspects of "the urban problem." The complex role of federal programs and policies in this process is beginning to be recognized.

This report examines residential location decisions and the influence of federal programs and policies.[1] It analyzes the factors that have shaped population flows between urban areas and the changing distribution of population between central cities and their surrounding suburbs. The concern is not only with the factors that have influenced *the number of* households moving between cities and from central cities to suburbs, but also factors that have qualitatively influenced these flows, affecting the concentration of the socially and economically disadvantaged in central cities.

The importance of the federal government's role in urban affairs has long been recognized, but perceptions of that role have changed in the last decade. Formerly, emphasis was placed on a fairly narrow group of policies—direct federal urban programs such as Urban Renewal and Model Cities, and federal social programs aimed at the major urban ills of poverty, substandard housing, and inadequate education. It is now being perceived that these direct programs are less important to the cities than a much broader array of federal programs and policies. It has become appropriate to speak of an "implicit" or "hidden" urban policy in referring to the whole set of federal actions that have affected urban areas during the postwar years.

URBAN PROBLEMS FROM A NATIONAL PERSPECTIVE

The immediate victims of the slow rate of economic growth and deteriorating quality in urban areas have no doubt about the existence of an urban problem and its seriousness. City dwellers are facing rising crime rates, ill-equipped public schools, and rising property taxes; and public officials are facing declining residential tax bases, housing abandonment, and a growing demand for public services. They are likely to have little patience with those who ask whether the urban problem is a "real" federal issue. Enough places and people are affected to make the problems national in scope. Some of our older large cities are unable to provide adequate public services for their increasingly poor population and are experiencing a net outmigration of more affluent families.

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[1] The term "programs and policies" is used throughout this report to encompass all federal expenditure programs, taxes, subsidies, regulations, and other activities that directly or indirectly affect urban population and residential location.

The issues are not nearly as clear-cut from society's perspective as they may seem to the affected parties and their public representatives. There is a logical gap between the finding that cities are in trouble and the conclusion that there should be a federal policy to "save" them. Even if the federal government adopted a general policy of intervention on behalf of declining cities, it is not at all clear what strategy could be followed without paying a high price in other locations. Consider, for example, a middle income family who leaves a central city for a suburb. To those remaining in the cities, the move may represent a loss; the markets for local firms have shrunk, the supply of skilled labor has decreased, and the local tax base has declined. To the suburbs, however, and to the household, the move brings economic gains. The 1976 annual report of the Congressional Joint Economic Committee concludes,

> To a large extent, the interregional migration of population and employment opportunities is occurring in response to real economic forces affecting the cost and efficiency of production and has contributed to overall efficiency and productivity in the private sector and should not be discouraged.

Recent public discussions of the urban crisis have emphasized large cities with substantial job and population losses. In many cases, these cities had previously enjoyed above average incomes and below average unemployment. Their decline may be seen as part of a tendency to equalize income and economic opportunities throughout the nation. Should they receive aid at the expense of growth areas that have lagged behind the pace of national development for so long?

Whether the federal government should intervene to assist cities can be determined only if the role of federal policies in shaping patterns of urban economic and residential development is understood. If existing federal programs and policies are biased against the older urban centers, then the suburbanization of the population and migration to the sunbelt are not unambiguous plusses to the national economy, and a variety of federal policy options could be considered to redress the balance. However, if anti-urban bias is not a problem, or if it accounts for only a minor fraction of urban decline, an alternative rationale must be found to justify a countervailing federal urban policy. The case for a major federal effort to save the cities must be based on the explicit judgment that the values of urban life justify some sacrifice of national economic growth.

PARAMETERS OF FEDERAL URBAN POLICY

Response to urban problems depends upon whether the problems are viewed as characteristics of certain geographic areas or of their populations. Some programs might enhance the comparative advantage of cities or neighborhoods, as places to live or conduct business, and others might provide income transfers, education and training, and improved mobility of the economically disadvantaged.

The belief that urban decline has been primarily a problem of place has led in recent years to a call for a federal policy of "urban conversion" or a "national policy on urban settlement."[3] Place-oriented federal policies offered as solutions to the problems of declining urban areas include:

1. *Stimulation of the demand for locally produced goods and services,* which can be achieved by directing the federal government to purchase goods and services from designated urban areas, through grants to local governments for local tax relief, and through transfer payments.
2. *Policies aimed at improving the economic comparative advantage of the area:* the construction of new economic infrastructure such as industrial parks, better transportation linkages, and capital facilities; labor training programs and subsidized transportation services (for both freight and labor); improved municipal services such as water, waste disposal, and fire protection; fiscal incentives that offer tax advantages for new firms or existing firms that undertake expansion; and improved local housing and residential amenities.
3. *Policies aimed at enhancing the environment in cities:* programs to encourage the renovation of housing, the reduction of crime, and the abatement of air pollution.

The proposition that urban decline is primarily a problem of those who remain in the cities leads to a very different perspective on federal policy issues. From this point of view, the urban problem arises from the departure of upper income and middle income taxpayers and from the erosion of the business tax base that has left the urban public sector with insufficient resources to serve the largely poor, elderly, and dependent populations left behind. If the basic federal concern is with the plight of these urban residents, the policy implications are far different than if the issue is how to save the city. People oriented solutions include:

1. *Policies to reduce the local tax burden of providing the redistributive services needed by disadvantaged central city populations* include welfare reform or federalization of welfare; federal or state assumption of responsibilities for education, health, or other social services; and assistance for low income housing.
2. *Policies aimed at enhancing the economic opportunities and locational options of inner city residents* include efforts to open up lower income housing outside the areas with concentrations of lower income people and to improve transportation from the inner cities to decentralized workplaces.
3. *Policies to reduce the incentive for concentration of "problem" populations in the declining cities* change the features of federally supported welfare and social services programs that create large differentials between the benefits available in the central cities of the Northeast and those available in other parts of metropolitan areas or elsewhere in the country.

These policies underscore the philosophical difference between a view of urban issues oriented toward people and the more coventional geographically or jurisdictionally oriented views. The people-oriented view implies that saving the cities is only a means to an end, and programs of federal aid to the urban public sector or of federally subsidized urban economic development should be evaluated as strategies for helping people injured by urban decline. They should be compared on a cost-effectiveness basis with policies that help the same people resettle in more favorable environments.

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[3] See, for example, the National League of Cities, "State of the Cities: 1975—A New Urban Crisis," Washington, D.C., 1976.

THE URBAN IMPACTS STUDY

An effective federal strategy to assist either places or their residents must be based upon an understanding of how federal actions influence the location decision of firms and households. The main purpose of the urban impact study is to determine current capabilities for identifying and anticipating the effects of federal policy on urban areas and what additional capabilities need to be developed. First, we construct a conceptual framework for analyzing the ways federal actions impinge upon urban conditions. This provides an overview of the linkages between federal policies and urban outcomes and a basis for deciding what empirical information is needed to assess them. Second, we review the literature in urban economics and related fields to investigate existing knowledge of each link in the urban network and determine the adequacy of assessment techniques.

Many types of federal policies and many different urban outcomes need to be considered. Some of the important relationships between federal policies and effects on cities are indirect. Typically, there are multiple links in the causal chains between policies and effects. The complexity of the problem makes it infeasible to analyze either the full range of urban outcomes or the full array of federal policies simultaneously. Therefore we divided the problem to establish a manageable research design.

The urban economy, as defined in this study, consists of three distinct but interacting sectors: (1) the private business sector, (2) the residential sector, and (3) the urban public sector. Federal influences on urban economic development are discussed in Roger J. Vaughan, *The Urban Impacts of Federal Policies: Vol. 2, Economic Development*, (hereafter referred to as *Economic Development*). The effects of federal policy on activity in the urban public sector are discussed in Stephen M. Barro, *The Urban Impacts of Federal Policies: Vol. 3, Fiscal Conditions*, (*Fiscal Conditions*); and the influence of federal actions on the urban residential sector are analyzed in this report. The main findings from all three documents are combined in an integrative report, *The Urban Impacts of Federal Policies: Vol. 1, Overview*, which examines the linkages among the three sectors of the urban system.

The subject matter is divided into these three parts so that a subset of urban outcomes and a subset of federal polcies may be considered in each volume. We are also able to classify federal programs and policies according to the sector in which they have their initial or direct effects. For example, federal aid to state and local governments have their initial effects in the urban public sector; federal subsidies and tax deductions for housing consumption in the residential sector; and federal economic development programs, business taxes, and regulatory policies in the private business sector.

Understanding federal policy influences on any one sector, therefore, requires not only the consideration of federal actions that affect the sector directly, but also how federally induced developments in other sectors have repercussions in the sector being examined. The discussion of federal influences in the residential sector must consider both the actions that impinge directly upon residential location decisions and also the indirect consequences of federal actions that have their initial effects on local fiscal and economic development outcomes.

THE SCOPE AND ORGANIZATION OF THIS REPORT

The conceptual framework analyses, the links between federal policies and residential location decisions, are presented in Section II. The distinction is made between population shifts from central cities to suburbs and from one urban area to another in a different region, because the decline in central city populations has resulted from both movements, and they have responded to different sets of federal policies.

The discussion of federal policy impacts is divided into two parts: their influence on intermetropolitan population movements—the migration to the sunbelt—and the influence on the process of suburbanization—the flight of the affluent from central cities. Each of these discussions is divided into three sections: recent trends, the factors that have shaped these trends, and how federal policies have affected these factors.

Section III describes recent trends in population growth among urban areas. Section IV reviews the major influences on intermetropolitan migration patterns, including local labor market conditions and environmental factors. Section V summarizes the influence of federal policies on these patterns, including income transfer payments and indirect influence through policies that have affected economic growth among regions.

The second part of the report analyzes the process of population suburbanization. Section VI describes recent trends, and Section VII reviews the factors that have led to suburbanization, including changes in accessibility and differences in amenities and public services between cities and suburbs. Section VIII analyzes the role of federal policies, including transportation programs, highway construction, housing subsidies, anti-discrimination policies, and policies that affect the behavior of local government.

Finally, Section IX summarizes the influence of federal policies and identifies research needs. Translating the information gaps into research agenda requires three additional steps: Diagnosis (is there an information gap because theory or methodology is inadequate, because data do not exist, or simply because the area has been neglected), evaluation of research cost and feasibility (what will it take to fill the gap), and most difficult, the value of additional knowledge. It has not been possible to assign to these issues the time and resources that they deserve. However, an initial attempt is presented in Section IX.

LIMITATIONS

The research consists strictly of analysis of existing data and models. No new data are presented and no new empirical analyses are undertaken. Because few of the reports examined have been concerned specifically with the urban effects of federal policy, it has been necessary to extract potentially relevant findings from diverse studies. Research has ranged from case studies of particular cities to sweeping reviews of national urban trends, making it difficult to assemble consistent evidence on specific issues or to offer generalizations that apply to whole classes of cities. Indeed, the report concentrates upon providing an inventory of federal policies that do influence residential location decisions, defines the way in which policies are linked to these decisions, and assesses the likely direction of that influence based upon theoretical reasoning and a review of the state of the art of our empirical understanding. The lack of empirical evidence has enhanced the importance of the conceptual framework as a device for giving coherence to what would otherwise seem isolated and unrelated research findings.

The report deliberately avoids duplicating the material in the two companion documents, which means that we do not discuss in detail federal policies that affect the urban population and patterns of residential location by influencing local fiscal conditions and the level and distribution of local employment.

This report emphasizes factors that have affected the distribution of the *demand* for housing. Because of resource constraints, little attention is devoted to factors that affect the supply of housing and the behavior of the construction industry.

Finally, this study concentrates on the *inadvertent* urban effects of federal policies. Little effort has been devoted to the analysis of policies that have been "deliberately" urban, such as Model Cities and public housing programs.

II. CONCEPTUAL FRAMEWORK

Analyzing the urban impacts of federal policies presents several difficulties. There are a great many federal policies that might conceivably influence the level of population in a given metropolitan area and its distribution within that area. There are also a great many ways in which the influence of federal policies on households will be reflected, including changes in population growth and distribution, housing quality and quantity, household income and the incidence of poverty, and more subtle measures of social and economic well being such as the crime rate and physical and mental health. Finally, there are many avenues through which policies may act upon urban households, both directly on households and indirectly through their influence on local economic conditions and on the behavior of local government.

THE UNIT OF ANALYSIS

The discussion of urban issues is often confused by the lack of a definition of exactly what geographical or political unit is discussed. This report makes three basic distinctions: between urban areas as a whole and their central city core; between urban areas located in different regions; and between urban areas of different types defined by size, age, or industrial structure. These distinctions allow us to examine the effects of federal policies in greater detail, and they permit identification of different issues and problems that arise at different levels of the urban system. For example, if a policy affects only cities in one region, then the types of actions necessary to correct this regional bias may be very different from those designed to assist all urban areas.

Central Cities Versus Metropolitan Areas

It has often been argued that central cities experience urban problems more acutely than suburban areas. They tend to have higher rates of poverty, are more subject to fiscal strain, and are losing population more rapidly. The distinction is important because each jurisdiction within a metropolitan area must be able to provide the public services demanded by its residents with the resources at its command. The selective nature of suburbanization may change the relative fiscal capacity of jurisdictions and the demands placed upon them to provide public services. Not only do economic changes affect the quality of local public services and their local tax "price," but the quality, the type, and the price of local public services will affect the location decisions of firms and households.

Jurisdictional boundaries reinforce other incentives for movement of firms and households away from the urban core. By crossing the municipal border, taxpayers can escape the burdens of paying for redistributive services for lower income people in the cities. If the boundary line were not there, there might still be incentives for suburbanization, but fiscal advantage would not be one of them. It is possible for a central city to be located in a prosperous and growing metropolitan area but fail to share in or benefit from that growth, because its boundaries are fixed and the growth is taking place in politically independent suburban jurisdictions.

Some problems would remain even without the jurisdictional boundaries. The concentration of low income households in a neighborhood may deter businesses. Such households may experience high unemployment and poverty because they are unable to travel easily within the metropolitan area or lack the experience and skills necessary to secure jobs.

Regional Differences

Many federal policies are region-specific either by intention or inadvertently. Federal policies may be deliberately targeted toward regions (for example, federal spending for defense procurements) or they may be directed at prevailing economic conditions or structures (for example, federal construction subsidies may provide more assistance to rapidly growing regions than to slowly growing areas). The distinction between those areas located in the sunbelt (the East and West South Central and parts of the Mountain and West divisions) and the old manufacturing belt (New England, Middle Atlantic, and East and West North Central divisions) may be particularly important. Federal policies that encourage growth in the former may lead to a decline in the latter.

Distinctions by Types of Urban Areas

Urban areas differ in their economic and spatial structure. The distribution of labor forces among industries, the availability of rail transportation, population density, the population size, and the age of the housing stock vary considerably, and the effects of federal policies on a particular industry, mode of transportation, energy source, or type of labor will differ among cities. For example, urban areas with a high concentration of employment in consumer durables industries tend to experience rapid declines in employment during national recessions. There is also a different response to policies depending upon the growth rate of the urban area. For example, firms in fast growing areas benefit from federal tax policies that favor investment in new equipment.

Where federal policies are likely to exert differential effects on central city areas, or upon urban areas in different regions or of different types, the distinctions described in this subsection will be used.

THREE SECTOR BREAKDOWN

The first step in disaggregating the urban impact study into a set of manageable components has been to regard the metropolitan area as divided into three separate but interacting local sectors—public, business, and household. Each of these sectors is inhabited by a different decisionmaking unit—the local government or special district, the firm, and the household—and each is influenced directly by a distinct subset of federal policies. For example, the local public sector is influenced directly by revenue sharing grants and by education grants, the local business sector is influenced by federal purchases of goods and services and by the regulation of freight rates and routes, and the household sector is influenced by housing policies and federal transfer programs.

The behavior of each sector is also influenced by many other forces, including the behavior of the other two sectors. An expansion in local employment raises local incomes, encourages local labor force participation, and attracts migrants from less fortunate labor markets. These changes expand the local tax base and raise the demand for local public services. The growth in population will, in turn, lead to further growth in employment.

The effects of federal policies on any one sector, therefore, have two components (Fig. 1); the direct effects (solid arrows), and the indirect effects of policies through induced changes in the other two changes (dashed arrows). However, it is not necessary to analyze the indirect federal policies in detail; this is done in the companion volumes of this study. It is only necessary to examine intersectoral links, the way local public sector outcomes and changing economic condition influence household behavior.

OUTCOMES, DETERMINANTS, AND POLICIES

The federal policies that act directly on the household sector and the way in which they act upon household behavior are identified in three steps: The first

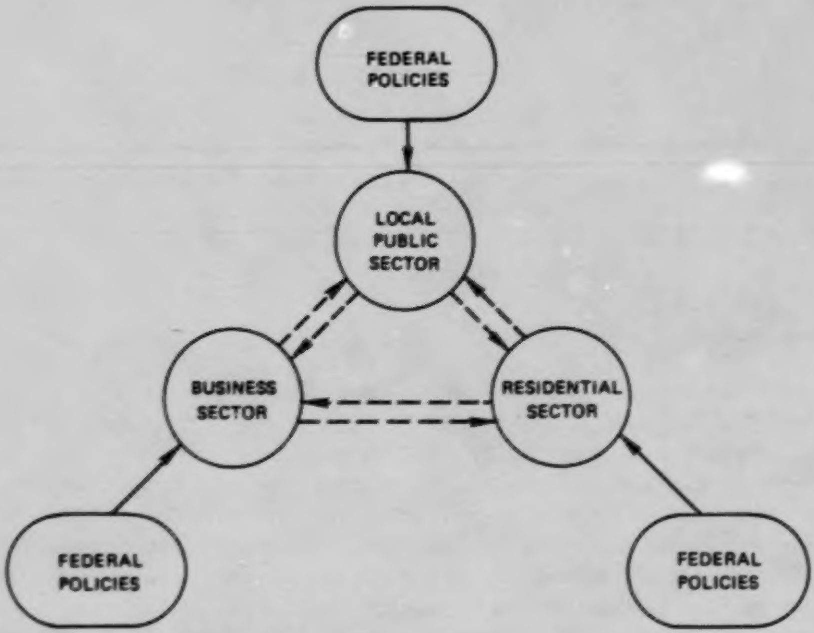

Fig. 1—Conceptual framework

defines the outcomes that reflect changes in the household sector, the second identifies the determinants of household location behavior, and the third identifies the federal policies that act upon these determinants. It is therefore possible to synthesize the results of many studies that do not deal directly with the influence of policies on residential outcomes but nevertheless provide information on individual links in this system.

Outcomes

This report emphasizes two major aspects of urban residential settlement: shifts in the distribution of households among and within cities. The concern is not only with the magnitude of these flows but also with their selectivity—differences in location patterns by different socioeconomic and racial groups. The selection of these outcomes was dictated by two pragmatic considerations: First, they have been examined by a substantial urban literature, and their determinants and the relevant federal policies have been identified although, all too often, empirical findings are tentative and subject to some qualifications. Second, these outcomes have become the focus of the urban policy debate. A small part of metropolitan growth differences can be explained by differences in the natural rate of population increase, but the major part is explained by differences among metropolitan areas in attracting and retaining mobile households. Suburbanization has left many central cities with the painful task of adapting to a declining population, a problem exacerbated by the growing concentration of minorities, the aged, and the poor in central cities.

In the local business sector the major outcomes are the growth of employment, income, and investment. The examination of the local public sector emphasizes local tax rates and the quality and type of local public services.

Determinants

The literature review has revealed that intermetropolitan migration patterns are shaped by the quality of the air, climate, and size of metropolitan areas (Sec. IV). Suburbanization has been influenced by the reductions in commuting costs resulting from growing reliance on the automobile, rising real incomes, and the better quality of the suburban residential environment (Sec. VII).

Federal Policies

The final stage is to identify the federal policies that act upon each of these determinants. Figures 2 and 3 summarize the policies for population shifts among metropolitan areas and between central cities and suburbs. Direct federal influence on migration is through transfer payment programs, and through policies that affect the attractiveness of metropolitan areas—environmental and recreational facilities programs. Some federal activities act on the migration process itself, including relocation grants and military deployment. Indirect federal influence has been through policies that have influenced the regional distribution of employment—highway construction, public works projects, natural gas regulation, for example—and through policies that influence local fiscal conditions—the distribution of grants, tax expenditures, and regulation (Sec. V).

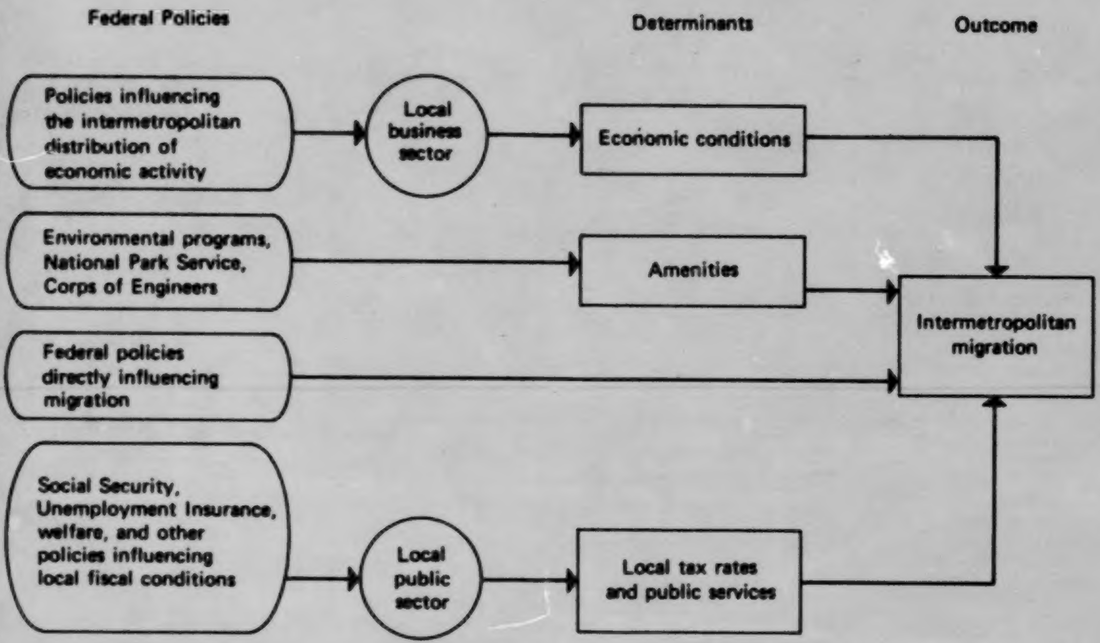
Federal Policies
Determinants
Outcome
Policies influencing the intermetropolitan distribution of economic activity
Local business sector
Economic conditions
Environmental programs, National Park Service, Corps of Engineers
Amenities
Federal policies directly influencing migration
Intermetropolitan migration
Social Security, Unemployment Insurance, welfare, and other policies influencing local fiscal conditions
Local public sector
Local tax rates and public services

Fig. 2—Determinants of and federal policies influencing intermetropolitan migration

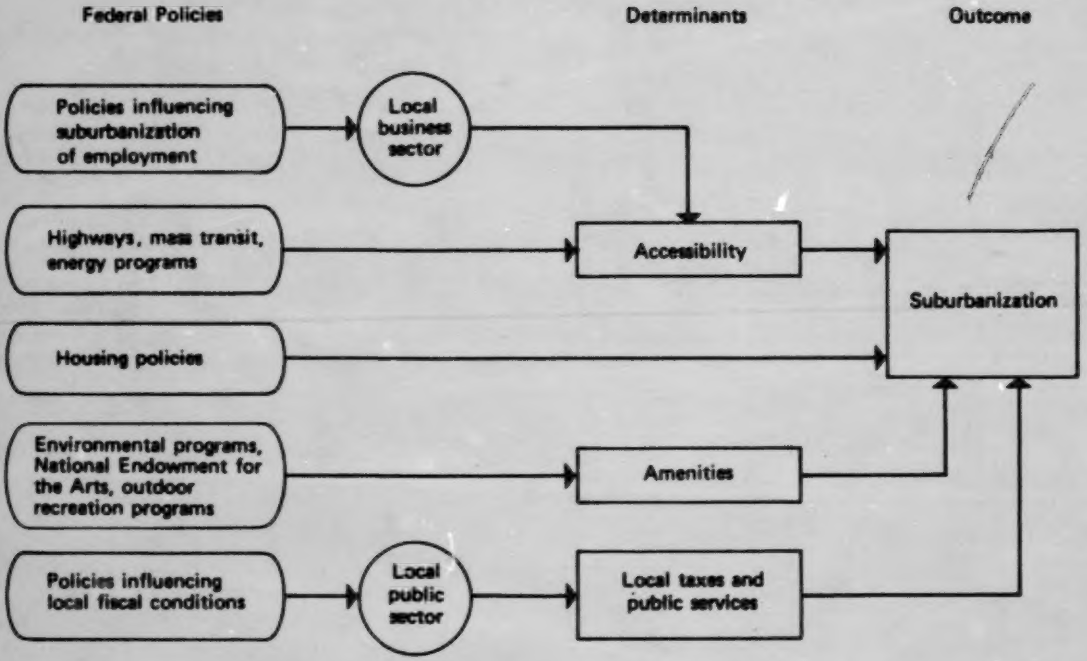
Federal Policies
Determinants
Outcome
Policies influencing suburbanization of employment
Local business sector
Highways, mass transit, energy programs
Accessibility
Suburbanization
Housing policies
Environmental programs, National Endowment for the Arts, outdoor recreation programs
Amenities
Policies influencing local fiscal conditions
Local public sector
Local taxes and public services

Fig. 3—Determinants of and federal policies influencing suburbanization

Federal influence on suburbanization has been affected by an array of housing programs that have allowed many middle and higher income households to move to the suburbs but have concentrated assistance for the poor in central cities. The indirect influence of federal policies has been through programs that have facilitated the suburbanization of employment—the tax structure and grants for infrastructure development—and federal transactions with the local public sector, including grants-in-aid and such regulations as enforced school desegregation (Sec. VIII).

III. RECENT TRENDS IN INTERMETROPOLITAN POPULATION DISTRIBUTION[1]

Since World War II, the nation has seen the reversal of several demographic trends: The baby boom during the 1950s has given way to almost zero population growth today, the net migration from the South to the North has been replaced by a net inflow into the sunbelt, and the movement of households from rural counties toward metropolitan areas has reversed into what is being called a rural renaissance. These changes have had a profound influence on the distribution of the metropolitan population.

NATIONAL POPULATION GROWTH AND HOUSEHOLD FORMATION

Until the mid-1960s, the nation's population grew by more than 1.5 percent a year. By 1975 the annual rate had fallen to 0.8 percent, and public concern was voiced over the problems of adjusting to slow growth and, in some areas, population decline.

Household formation has grown more rapidly than population. Between 1960 and 1970, population grew by 13.3 percent, but the number of households grew by 20.1 percent. During the 1970s, the disparity widened considerably. The population growth of 4.4 percent between 1970 and 1975 was exceeded by a growth in the number of households of 12.2 percent. These differences have been reflected in a decline in household size from 3.33 in 1965 to 2.94 in 1975. Households with children present under the age of 18 are now a minority of all households, increasing by only 5 percent between 1960 and 1975. Married couples with no children present, including those whose children have left and those not having children, grew in number by 42 percent during the same period. Households composed of unrelated individuals grew by 72 percent; by 1975 they constituted 36 percent of the total.

Until recently, metropolitan areas grew more rapidly than the nation as a whole. In 1950, 62.5 percent of the population lived in 243 SMSAs. By 1970, this had risen to 68.7 percent but fell to 68.1 percent by 1973. Inmigration has been a major determinant of urban population growth. During the early part of this century, cities were fed by waves of migration from Europe. Until the late 1960s, rural migrants moved into northern cities. The drying up of these sources has caused metropolitan areas to grow more slowly than the nation as a whole. Even so, about 500,000 inmigrants a year from abroad account for 25 percent of the net annual population growth of metropolitan areas. Population has grown in only 11 of the 40 largest SMSAs since 1970.

REGIONAL POPULATION GROWTH

The most striking feature of regional population growth trends has been the steady decline in the share of the nation's population in the Northeast, Midwest, and South Central areas and the steady increase in the Mountain, Pacific, and South Atlantic census divisions (Table 1).

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[1] Recent trends in suburbanization are discussed in Sec. VI.

The slower growth of the Northeast is not a new trend. The issue has emerged because the national slowdown in growth has left the Northeast with zero growth regionally and a sharp population decline in its metropolitan areas.

Regional population growth differences have been strongly influenced by the migratory flows. Between 1970 and 1973, the Northeast lost 779,000 people through migration. More than 1.6 million left the region, but over 800,000 migrants also moved into the area. More than half of all outmigrants moved to the South (Fig. 4). The South netted 856,000 migrants and the West 396,000, but the North Central lost 471,000. Between 1970 and 1975, almost half of the South's population increase, 2.6 million out of 5.3 million, was accounted for by net inmigration.

Migratory flows differ between blacks and whites. Less than 5 percent of those leaving the Northeast and North Central regions were black, although blacks constituted more than 10 percent of the population and nearly 20 percent of the unemployed in those regions.

The changes in regional personal incomes have to some extent paralleled changes in shares of national population. Regional per capita incomes expressed as a percentage of the national per capita income between 1929 and 1975 are shown in Fig. 5. The narrowing in regional differentials is apparent. As recently as 1960, incomes in the Northwest were more than double those in the South. By 1975, three-quarters of this disparity had been eroded.[a] Growth in population has been most rapid in poorer regions, and the growth has been associated with an increase in living standards. The important exception is the West, which has consistently enjoyed high income and rapid growth.

Table 1

DISTRIBUTION OF POPULATION BY CENSUS DIVISION,
PERCENT SHARES, 1920-1970

Division	1920	1940	1950	1960	1970	Percent Change in Population Share 1920-1970
New England	7.0	6.4	6.2	5.9	5.8	- 17.1
Middle Atlantic	21.0	20.8	19.9	19.1	18.3	- 12.9
East North Central	20.3	20.1	20.1	20.2	19.8	- 2.5
West North Central	11.8	10.2	9.3	8.6	8.0	- 32.2
South Atlantic	13.2	13.5	14.0	14.5	15.1	+ 14.4
East South Central	8.4	8.2	7.6	6.7	6.3	- 25.0
West South Central	9.7	9.9	9.6	9.5	9.5	- 2.1
Mountain	3.1	3.1	3.4	3.8	4.1	+ 32.3
Pacific	5.5	7.7	10.0	11.8	13.1	+138.2

SOURCE: From data presented in Bureau of the Census in *Statistical Abstract of the United States 1973*, U. S. Department of Commerce, Washington, D.C., 1974.

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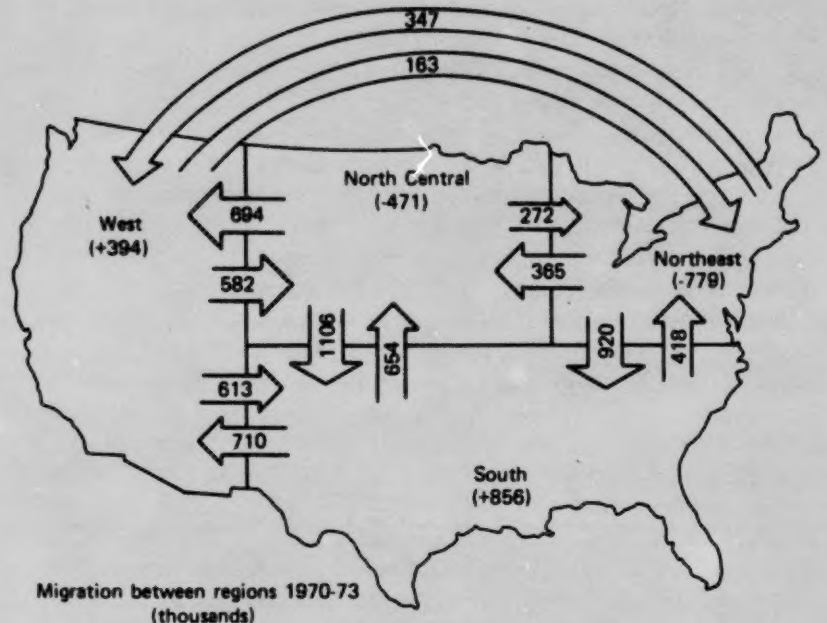
[a] Regional disparities are even less if differences in cost of living are taken into account.



SOURCE: Bureau of the Census, *Current Population Reports*, Series P-20, No. 262, U.S. Department of Commerce, Washington, D.C., March 1974, Table 29.

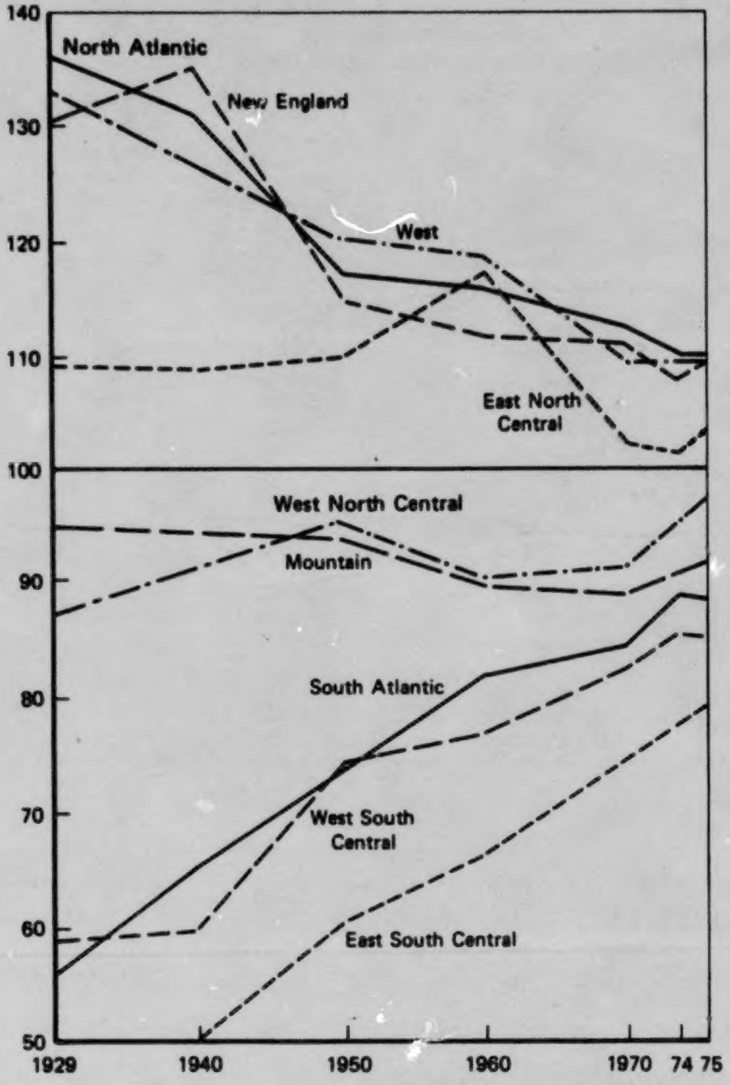
Fig. 4—Patterns of migration

However, the South and West still contain higher concentrations of poor households than the Northeast and North Central areas. Even with income transfers, the percentage of households falling below the poverty level in the South is almost double that in the Northeast and North Central regions.

Regional differences in population growth are reflected in differences in urban growth rate in different regions. The fastest growing cities are located in the South and West, and slow growing cities are located in the Northeast and North Central region. (See Table 2.)

GROWTH BY TYPE OF URBAN AREA

Large urban areas have grown in population much more slowly than small areas (Fig. 6). Between 1950 and 1970, urban areas expanded their share of the nation's population from 64.0 to 73.5 percent. However, the population share of areas with population in excess of one million fell, and that of areas with populations between 250,000 and one million remained constant. All other size categories housed a larger share of the nation's population in 1970 than in 1950. Large cities appear to have lost some of their attraction as places to live. Although this century has witnessed the urbanization of a large fraction of the nation's population, the share living in cities with populations in excess of one million was the same in 1970 as it was in 1920.



SOURCE: U.S. Department of Commerce, *A Myth in the Making: The Southern Economic Challenge and Northern Economic Decline*, Economic Development Research Report, November 1976, p. 12.

Fig. 5—Per capita personal income as percent of U.S. average, by region, 1929 to 1975

Table 2

THE TEN FASTEST AND SLOWEST GROWING LARGE CITIES, 1970-1975

City	1975 Population	Percent Increase or Decrease Since 1970
10 fast-growing cities		
Huntington Beach, Calif.	149,706	29.1
Colorado Springs, Colo.	179,584	27.8
Anchorage	161,018	27.4
Virginia Beach, Va.	213,954	24.3
San Jose	555,707	20.5
El Paso	385,691	19.7
Austin, Texas	301,147	17.7
Anaheim, Calif.	193,616	16.4
Las Vegas	146,030	16.1
Albuquerque	279,401	14.6
10 shrinking cities		
Dayton, Ohio	205,986	-15.8
St. Louis	524,964	-15.6
Cleveland	638,793	-14.9
Minneapolis	378,112	-13.0
Buffalo	407,160	-12.0
Atlanta	436,057	-11.9
Detroit	1,335,085	-11.8
Pittsburgh	458,651	-11.8
Newark	339,568	-11.1
Gary, Indiana	167,546	-11.1

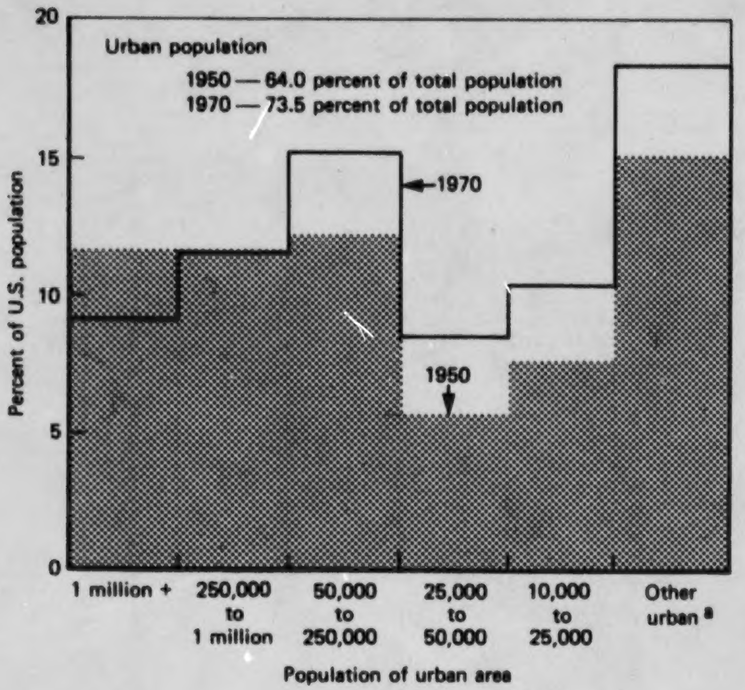
SOURCE: Bureau of the Census.

Large urban areas are experiencing an absolute decline of population. Between 1960 and 1970, 130 central cities of SMSAs lost population; and since 1970, eight of the ten largest SMSAs have lost population. Most of the growing large cities are in the sunbelt. In fact, the regional effect has outweighed the size effect.

NONMETROPOLITAN GROWTH

Population in nonmetropolitan areas, after a prolonged period of decline, has begun to increase. Between 1960 and 1970, the natural rate of increase was more than offset by migration to metropolitan areas. Since 1970, nonmetropolitan counties have gained through migration—a net gain from both central cities and suburban areas (Fig 7). Perhaps most striking in this trend is that counties *not* adjacent to metropolitan areas, which had a net outmigration of −1.2 percent annually during the 1950s, had a net inmigration of 0.9 percent annually during the 1970s (Table 3).

The most rapid growth in nonmetropolitan population has been in the West (11.6 percent) and in the Northeast (5.1 percent). In both of these regions, nonmetropolitan growth exceeded suburban growth. Suburbs grew more rapidly in the North Central and in the South.



[a] Other urban includes urban areas with population less than 10,000 and unincorporated parts of urban areas.

Fig. 6—Distribution of U.S. population by size of urban area, 1950 and 1970

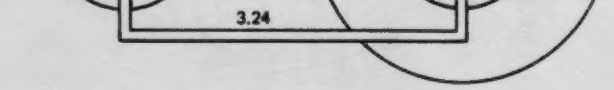

NONMETROPOLITAN AREAS
METROPOLITAN AREAS
2.97
Suburban Ring
+5.42
9.77
3.45
Central Cities
+1.60
2.16
-7.02
3.83
3.24

Fig. 7—Migration between types of areas, 1970-74 (millions)

Table 3

COMPONENTS OF POPULATION CHANGE FOR GROUPS OF METROPOLITAN AND NONMETROPOLITAN COUNTIES, 1960-1970 AND 1970-1973

Population Category	Provisional 1973 Population (000's)	Annual Population Growth Rate		Annual Natural Increase Rate		Annual Net Migration Rate	
		1970-1973	1960-1970	1970-1973	1960-1970	1970-1973	1960-1970
United States	209,851	1.0	1.3	0.7	1.1	0.2	0.2
Inside SMSAs[a] (Metropolitan)	153,350	0.9	1.6	0.8	1.2	0.1	0.5
Outside SMSAs (Nonmetropolitan)	56,500	1.3	0.4	0.6	1.0	0.6	-0.6
In counties from which:							
> 20% commute to SMSAs	4,099	1.9	1.0	0.6	0.9	1.4	0.2
10%-19% commute to SMSAs	9,683	1.4	0.7	0.6	0.9	0.8	-0.2
< 10% commute to SMSAs	42,719	1.2	0.3	0.7	0.9	0.5	-0.7
Entirely rural counties not adjacent to an SMSA[b]	4,401	0.9	-0.4	0.0	0.8	0.9	-1.2

SOURCE: Preliminary unpublished data to be released shortly by Census; and Calvin L. Beale, "The Revival of Population Growth in Nonmetropolitan America," forthcoming.

[a] SMSAs defined as of December 31, 1974, except in New England, where definitions in terms of entire counties have been substituted.

[b] "Entirely rural" means the counties contain no town of 2500 or more inhabitants.

IV. EXPLAINING INTERMETROPOLITAN MIGRATION[1]

Migration patterns determine whether a city grows or shrinks in population. Although differences in birth rates explain a small part of the differences in intermetropolitan growth rates, inmigration and outmigration rates are far more important forces. The growth and composition of the metropolitan population influence the availability and cost of labor and the demand for goods and services, as well as the tax base and public service demands. At the same time, population growth cannot be sustained without an expansion of employment opportunities.

This section examines the factors that influence migration decisions. These are intermetropolitan differences in:

- Socioeconomic characteristics of households, including age, education, income, employment status, and race;
- Economic conditions, including the availability of employment, prevailing wages;
- Transfer payments and local public sector activities, including education, social services, and tax rates;
- Amenities, including climate, air quality, and recreational facilities; and
- Distance and past migratory patterns.

These factors differ in importance among different types of households. For example, an unemployed, semi-skilled worker may place primary emphasis on job opportunities, while a highly skilled professional employee may consider the quality of local amenities to be paramount. Because the type of migrant attracted to a location influences the composition of the local population, and therefore the [illegible] of economic development as well as the type of public services demanded, it [illegible] important to distinguish migratory behavior of different socioeconomic groups.

THEORY OF MIGRATION

Analyses of migration must make a fundamental distinction between *net* migration (the arithmetic differences between inflow and outflow) and *gross* migration (the actual flow of movers from an origin to a destination or, alternatively, the flows into and out of a place).[2] Net migration is an important change in stock factor and is a crude measure of the community's attractiveness as a place to live.

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[1] This section has benefited from extensive comments from Peter A. Morrison.

[2] Morrison (1973) describes the following definitions of mobility:

In current practice, the Bureau of the Census distinguishes the population classes shown in the table below according to mobility status and type of mobility. Classifying anyone who moves across a county line as a migrant has one important drawback: because metropolitan areas consist of clusters of counties, many migrants are simply changing residence within the same area.

Mobility Status	*Type of Mobility*
Living in the same house	Nonmover
Living in different house in same county	Intracounty mover
Living in different county	Migrant
Same state	Intrastate migrant
Different state	Interstate migrant

This discussion uses the Bureau of the Census definition.

Migration studies have examined both net and gross migration flows and have used several types of models. Some are mechanistic in form, analogies from the physical sciences applied to aggregate patterns of behavior, including *gravity models* and *intervening opportunities models*, which have little or no theoretical basis. However, others rest on the view of migration as an investment decision, in which households weigh the benefits of moving, a potentially higher income or a more attractive environment, against the monetary and psychological costs.

Economic Theory of Migration

The decision to migrate is analogous to an investment decision. The potential migrant weighs the costs and benefits of the alternative places to live and selects the option that yields the greatest net benefit. The decision may be made under conditions of imperfect knowledge and great uncertainty, but these constraints need not undermine the basic evaluative nature of the decision. Many factors enter the cost-benefit calculation.

Benefits. A move may yield both pecuniary and nonpecuniary benefits. The pecuniary benefits are the increase in expected real disposable earnings determined by expected wage rates, costs of living, the local tax rates, and the likelihood of finding employment at the new location.

Nonpecuniary benefits are the values that a potential migrant attaches to particular locations, including a pleasant climate, accessibility to the ocean or a national recreation area, clean air, a good school system, a low crime rate, proximity to friends, and, perhaps, the pleasure of experiencing a new environment. Dollar values cannot be attached to these benefits directly, although efforts have been made to measure their values by the reduction in wages that workers accept to enjoy them (Izraeli, 1973).

Costs. Against these potential benefits must be weighed the costs of moving. The pecuniary costs are the monetary outlays the migrant must incur in the course of the move; an advance visit to secure housing or employment, other costs of securing necessary information, the difficulty of relocating family and possessions; forgone earnings during the time spent moving, the cost of decorating the new residence, and the costs of searching for a job.[3] Some aspects of these costs deserve mention. First, costs increase with distance moved. Thus, all other things equal, one would expect the number of migrants to a given location to decline as the distance moved increases. Second, costs increase with household size. Third, costs, particularly the cost of time spent moving, increase with income. Physical relocation costs will also increase if volume of possessions is related to income. Fourth, because information is expensive to obtain, potential migrants rely heavily on social contacts as sources of low-priced information, leading to "networks" in which migrants follow family and friends to the same destinations.

Although nonpecuniary costs are difficult to measure, they may be very important. These may include separation from friends or family, initial unfamiliarity with a new location, and sometimes a sense of insecurity stemming from a radical uprooting. The longer an individual has lived at the present address, the greater the costs of uprooting. An older person will probably experience higher uprooting costs than a younger one.

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[3] For some migrants, direct moving costs may be paid for by the migrant's employer. There is no research on the prevalence or the influence of this practice.

Decision Process. A household is assumed to compare the present value of the costs and benefits associated with alternative locations, including staying put, and to take the option that offers the highest value of net benefits.[4] This basic model has been refined to include cost of living differentials, as well as differences in unemployment rates affecting expected income.

Some authors, notably Morrison (1970a), have argued that economic models confound two separate behavioral processes: (1) the decision to move and (2) the choice of location. Cost-benefit models are handicapped because the relevant pecuniary and psychic costs are difficult to identify and even harder to measure. Other critics have questioned the validity of assuming a rational population of prospective migrants who periodically review the costs and benefits of migration—an assumption challenged by Lansing and Mueller's (1967) observation that 82 percent of those living in their current residence at least five years had never seriously entertained the prospect of moving during that period.

These limitations, it should be stressed, are points at which improvements in model specification can be made and do not invalidate the underlying approach. Characteristics of the household may profoundly affect the costs and benefits of the migration decision, and therefore inclusion of household characteristics in a cost-benefit model is consistent with economic theory.[5] That a large number of households have not considered moving does not deny the rational decision process outlined above. Households that are averse to relocation, whose wage earner has developed highly location-specific or job-specific skills or who works in an industry with a uniform national wage, are unlikely to find that the benefits of moving have changed enough within five years to make migration attractive.

To transform this theory into a carefully calibrated predictive model of regional migration flows requires a massive volume of data, which are often not available. A number of studies have used models in which net migration is a function of income levels at origin and destination,[6] using employment rates, transfer payments, and other income components to supplement basic data on income or wage

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[4] The exact form of an early model was (Sjaastad, 1969):
where

$$\sum_{j=1}^{n} \left[(Y_{dj} - Y_{oj})/(1 + r)^{j} \right] - T > 0.$$

Y_{dj} = expected real earnings at the destination in year j;
Y_{oj} = expected real earnings at the origin in year j;
T = cost of moving;
N = total number of years in which future earnings are expected; and
r = rate of discount on future earnings.

[5] For example, DaVanzo (1976) uses a two stage procedure in her analysis of why families move. During the first stage, she uses certain household characteristics to estimate the probability that a household will move. During the second stage, she analyzes the behavior of households that do relocate.

[6] Economic theory implies that extensive inmigration should narrow wage differentials. In fact, Borts and Stein (1964) found that, in response to migration, interregional variations in salaries and income tended to decline, a finding reinforced by the data presented in Sec. II of the *Economic Development* report. However, wage differentials have persisted, indicating that the labor market may achieve equilibrium among regions in part through regional variations in the unemployment rate and in hours worked. In addition, some regional variation in the wage rate will persist to compensate for differences in amenities.

differentials.[7] However, these models are, in essence, simplified specifications of the basic economic model of migration. Coefficients may be biased because many important variables are omitted. In some cases the included variables may not be properly specified. For example, money income differentials may not reflect the true differences in expected real income at potential destinations if costs of living and unemployment rates differ as well. Finally, the models yield little useful information for *predicting* migration flows because they assume that the explanatory variables—income, wage, or unemployment rate differences—are determined exogenously.

The relationships between jobs and the movement of people are difficult to disentangle. People pursue jobs, and firms relocate to take advantage of available labor and growing markets. A number of models incorporating simultaneous movement of people and jobs have been built. Muth (1968, 1971) established the simultaneous relation between net migration and employment growth. Greenwood (1973), Olvey (1970, 1972), and Steinnes (1977) subsequently expanded on Muth's work.[8] Similar models have also been used to estimate the racial compostion of migratory flows and the effects of migration on levels of employment among blacks and whites (Okun, 1968; Persky and Kain, 1970; Greenwood, 1973). Applications of the simultaneous model have made valuable progress in the effort to disentangle migration and economic growth. Their major disadvantage is that they require a considerable volume of data and are complex to formulate and estimate.

The economic theory of migration has been used to justify a remarkably diverse set of empirical estimating techniques. These might be divided into those that examine (1) factors affecting the decision to migrate, (2) factors determining the relative attractiveness of destinations, and (3) flows—gross or net—between places. Models in the first category generally use household mobility data and relate the decision to move to household characteristics (DaVanzo, 1976). Models in the second category relate net migration flows to an area to labor market characteristics, usually through cross-sectional analysis (Cebula, 1974a and 1974b). Models of the third type are often based on simultaneous equation systems of employment growth and migratory flows (Muth, 1971; Steinnes, 1977).

Descriptive Models

Although economic and behavioral models have been derived from theories of migration, other models have been developed to meet the practical needs of *predicting* the magnitude of place-to-place migration flows, including the gravity model, the intervening opportunities model, and probabilistic and stochastic transition models. The rationale behind these models is that, although they are simple, they depict relationships that are generally consistent with economic theory.

Gravity Model. Deriving from Ravenstein's (1885) observations on migration patterns in Great Britain between 1871 and 1881, the gravity model posits the migration flow between two points as a function of population size at each locale and the distance between them.[9]

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[7] For example, Blanco (1963, 1964) and Oliver (1964, 1965) examine unemployment as a contributor to migration; Okun (1968) considers the role of income rather than wage differentials in migration. Lowry (1966), Speare (1971a), and Greenwood (1968) consider migration as a response to a perceived labor gap at alternative destinations. Finally, Todaro (1969) and Harris and Todaro (1970) were perhaps the first to consider the joint effects of income differentials and the likelihood of finding employment in determining migration flow.

[8] Olvey's study uses five structural equations to estimate (1) growth in manufacturing employment, (2) growth in service employment, (3) gross inmigration within state or from a contiguous state, (4) gross inmigration from a noncontiguous state, and (5) gross outmigration.

The distance parameter measures direct moving costs and information availability, and population size is an approximate measure of relative job opportunities. For example, a large number of migrants move between Washington, D.C. and New York City, because so many people know of potential job openings in each place and the number of openings is large. The flows are much less between more distant, or smaller, metropolitan areas. In effect, the gravity model suggests that migration is determined by features similar to those of the second type of economic model described above, although it focuses upon gross rather than net migration flows.

The main advantage of the gravity model lies in the high degree of predictive accuracy that can be achieved with a few readily measured variables. A major disadvantage is that predicted migration flows are independent of the characteristics of the population and hence cannot reflect real changes in population composition that may be under way (Shaw, 1975 and Speare et al., 1975). Further, the model is insensitive to directional bias because it predicts identical flows in each direction between two points; and it is insensitive to certain types of migration that are not attracted by the opportunities at a potential destination, including return migration and business transfers.[10]

Intervening Opportunity Model. Unlike the gravity theorists, who consider migration a function of only distance and population size, Stouffer (1940, 1960) contends that population movements can best be considered in terms of the array of opportunities (e.g., job vacancies, housing) available to potential migrants at various distances from their point of origin. Stouffer states that "the number of persons . . . [migrating] a given distance is directly proportional to the number of intervening opportunities" (1940, p. 846). The simple gravity model is therefore modified by a measure of the number of intervening opportunities between the two places.

The intervening opportunity model offers an important advance over the gravity concept in that it allows for asymmetric migration flows between two points. Also, by introducing the notion of opportunities, Stouffer takes some first steps toward infusing the model with a behavioral explanation of household mobility. A major problem, of course, is deciding what constitutes an opportunity. In his original formulation, Stouffer used housing vacancies as a measure of opportunity; however, in more recent work, both Stouffer (1960) and Galle and Taeuber (1966) used total number of inmigrants as their measure of opportunity, producing a highly tautological argument and divesting the model of any explanatory power.

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[9] In its most general form, the model is specified as

$$M_{i \to j} = k(P_i \times P_j / D_{i \to j}a)$$

where

$M_{i \to j}$ = migration from place i to place j;
P = population or some index of population at place i;
$D_{i \to j}$ = distance between place i and j;
k = a constant relating volume of migration to the gravity function at a specified time; and
a = a constant varying between 1 and 2.

[10] Several scholars have devised techniques for depicting directional bias in the spatial flow of migrants. For example, Tarver and Shees (1967a, 1967b) specified vectors summarizing the direction, and magnitude of various migratory movements; Lewis (1971) and Grindstaff (1970) similarly note the existence of traditional migration channels for Negro migration to the north. Additional descriptive efforts have been developed by Wolpert (1967), NcNuity (1970), and Schwind (1971); but rich explanatory material appears to be lacking.

Probabilistic and Stochastic Transition Models. Probabilistic and stochastic transition models constitute a third and more recent descriptive model of the migration process. Shaw (1975) notes that these models describe migration behavior for specific regions and times or indicate the distributive consequences of present mobility trends.

These models estimate the reallocation of population within a specific geographic area during a given time period by applying a transition matrix to a vector representing the original population distribution. The approach is cumbersome and requires the construction of an extensive matrix, and it cannot accommodate changes in the relative attractiveness of various locations (Speare et al., 1975).

FACTORS AFFECTING MIGRATION

The decision to migrate is influenced primarily by a household's socioeconomic characteristics and by differences in local economic conditions. For some households, local public services (including transfer payments) and local taxes are important. For others, the attractiveness of the environment is a key factor. Past migration flows and the distance between metropolitan areas also influence the flow of migrants. However, many aspects to this process are still not well understood and have received little attention.

Our ignorance results from several factors. First, many studies have estimated the relationship between net migration and local labor market and environmental conditions. Aggregation ignores the fact that different groups may respond differently. The use of net migration as the dependent variable also confounds the relationship between factors that encourage inmigration and those that discourage outmigration. Second, many explanatory variables are confusing and overaggregated. For example, local unemployment rates are used to reflect local labor market conditions. Yet a high unemployment rate among durable goods production workers may not affect a white-collar worker. Third, and perhaps most important, variables that are included as independent explanatory variables are themselves affected by the migration process and mutually interact. For example, local wage rates and amenities are used to measure the attractiveness of an area to migrants, yet wages are determined in part by the flow of incoming workers. There is evidence that an area richly endowed with amenities will have lower wage rates than a poorly endowed one, because the latter must offer monetary compensation. The influence of wage rates and amenities cannot be estimated by using them as separate explanatory variables for migration flows. If changes in the regional distribution of employment are to be understood, then further research must be undertaken using a simultaneous equation system and disaggregated data.

Household Characteristics

Compared with the population as a whole, migrants are younger, more educated, more skilled, less likely to be minorities, and they have a history of above average mobility. Most analysis of the characteristics of migrants (and most of the data presented below)[11] has been from census data, which includes all intercounty moves, and therefore many intraurban moves; but other research has shown that long distance moves are even more selective (Long, 1973).

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[11] Data, unless specified, are from U.S. Bureau of the Census, *Current Population Reports*, Series P-20, No. 262, March 1974.

Age and Family Characteristics. Young adults migrate at a rate nearly twice that of any other age group. The second most mobile age group is children under six years of age—the offspring of the young adult migrants. Changes in marital status and family size are associated with increased mobility. Between 1969 and 1970, 27.1 percent of those just married migrated in contrast to only 6.3 percent of single people. Although the arrival of additional children tends to increase the probability that a household will migrate, the presence of school age children, or other dependents, reduces it.

Education. Migrants are drawn disproportionately from the well-educated. College-educated people are three times more likely to migrate than those with only an elementary education. Nearly 23 percent of those with a college education migrated between March 1970 and March 1973, compared with only 6.4 percent of those with elementary education and 12.7 percent of high school graduates. The differential migration rates are best understood as the product of two forces: (1) heightened awareness on the part of the educated regarding the residential and employment alternatives open to them; and (2) the national labor market within which highly educated people seek jobs.

Occupation and Employment Status. Highly skilled or specialized workers tend to be more mobile than those who are less skilled. Between March 1970 and March 1973, 19.7 percent of all professional workers and 14.8 percent of those in managerial occupations migrated, but only 10.7 percent of all clerical workers and 9.9 percent of all laborers. Shaw (1975, p. 24) observes, "whereas the supply and demand for unskilled labor can be met within a local labor market, the more highly skilled the occupation, the more likely supply and demand for the skill will extend from the local to regional or national levels." Unskilled and low income workers may not be able to afford to move. Professionals, managers, and sales workers are much more likely to migrate than blue collar workers. There are systematic differences in the propensity to migrate according to employment status. Unemployed men migrate at nearly twice the rate of employed men (Morrison, 1972). Those in the armed forces showed the greatest mobility rates of all, with nearly 22 percent making intrastate moves in one year. Mobility rates differentiated by employment status are shown in Table 4.

Race. Although residential mobility is greater among nonwhites than among whites, a greater proportion of moves by nonwhites tend to be local ones. Between March 1970 and March 1975, 24.5 percent of all nonwhites but only 18.6 percent of whites moved at least once within the county where they resided in 1970. Migration, however, was more often undertaken by whites, 13.3 percent of whom migrated compared with 7.0 percent of nonwhites. Lansing and Mueller (1967) note that differences in education, occupation, or even age may explain this differential.

Income. The propensity to migrate is not strongly linked to household income. This is somewhat surprising because white collar workers are more prone to migrate than blue collar workers. However, three factors may explain this: (1) highly paid blue collar workers are quite mobile, (2) time spent searching for a job at the new location may temporarily lower incomes, and (3) migrants' tendency to be young indicates that the white collar migrants are at the beginning of their careers when salaries are not significantly above blue collar wages.

Table 4

ANNUAL MOBILITY OF THE MALE POPULATION 14 YEARS AND OVER, BY EMPLOYMENT STATUS, MARCH 1969 THROUGH MARCH 1970

	Mobility Rate per Hundred Population			
		Migration		
Employment Status[a] and Weeks Worked in 1969	Total	Intrastate	Interstate	Local Mobility
Total, males 14 and over	18.1	3.1	3.3	11.6
In labor force	19.1	3.2	3.7	12.2
Armed forces	41.7	4.7	21.9	15.1
Employed	18.2	3.2	3.1	12.0
50-52 weeks	15.8	2.7	2.0	11.1
27-49 weeks	27.1	4.8	5.5	16.8
26 weeks or less	27.7	5.5	9.1	13.0
Did not work	27.0	3.1	13.1	10.8
Unemployed	27.8	4.5	6.7	16.5
Not in labor force	14.9	2.8	2.3	9.8

SOURCE: U.S. Bureau of the Census, *Current Population Reports*, Series P-20, No. 210, January 15, 1971, Tables 7 and 10. Adapted from Peter A. Morrison, *Population Movements and the Shape of Urban Growth: Implications for Public Policy*, The Rand Corporation, R-1072-CPG, August 1972, Table 3.

[a] As of March 1970.

Household Mobility History. People with a history of past moves tend to move again. The propensity to move (either locally or intercounty) declines with length of time a household has occupied its residence; and, regardless of how long they have resided in their current county, people who changed their residence the previous year are considerably more likely to move again. However, this is largely because migrants who have been unsuccessful in securing employment at their destination return to their origin (Long and Hansen, 1975). A past chronic mover who returns home is no more likely to move than a household with no previous migratory experience (DaVanzo, 1976). Homeowners appear considerably less prone to migrate than renters.

Relative Importance of Characteristics. Little work has been done to assess the interrelations among household attributes with respect to migration. DaVanzo (1976), a thorough analysis based upon individual household data, found that employment status, income, and past mobility experience were the most important factors affecting migration. Age and education were insignificant when these other factors were considered together.

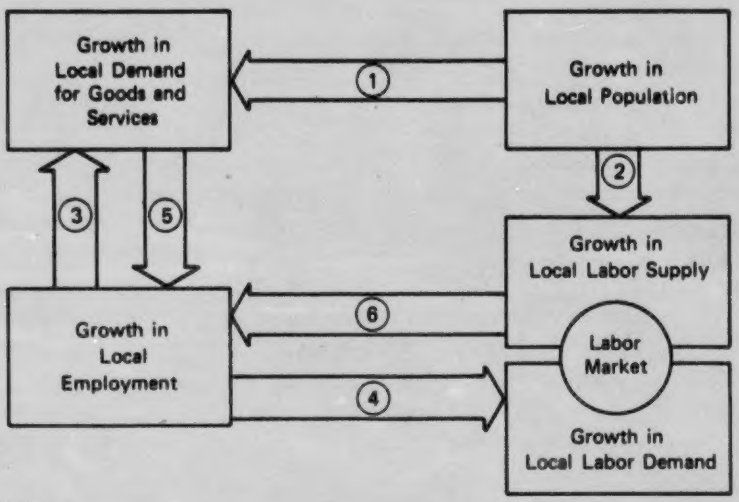
Economic Conditions

Intermetropolitan differences in economic conditions play a paramount role in determining flows of migrants; rapid growth in employment and high incomes attract migrants.

Employment and Population Growth. The expansion of economic activity and population growth are interrelated. An increase in employment attracts job-seeking migrants, and an increase in population swells the demand for goods and services (Fig. 8).

In view of the interactive nature of the growth process depicted in Fig. 8, it is misleading to ask whether the inmigration of households precedes or follows the growth of jobs. Rather, it is relevant to ask, within the context of the system, which component, households or employment, is subject to the stronger *outside* influence, and what these outside influences are. For example, the discovery of oil in Alaska generated employment growth without the previous inmigration of workers. Conversely, awareness of the harmful effects of air pollution may lead some households to migrate from dirty to clean cities even if the move does little to improve their employment prospects. These "exogenous" forces apparently have explained a greater share of the interarea population migration than they have regional differences in employment growth (*Economic Development*, Sec. IV; Muth, 1971). Relative economic conditions are the major force in determining household migration patterns, but they play a smaller role in explaining population growth than population growth plays in explaining employment growth.

Convincing evidence is hard to find. Studies have found a strong correlation between employment growth and previous population growth than vice versa. Muth (1971) used a simultaneous equation model and found that the coefficient linking employment growth to population growth was larger than that linking population growth to employment growth, although there are several problems in


Growth in Local Demand for Goods and Services
Growth in Local Population
Growth in Local Labor Supply
Labor Market
Growth in Local Labor Demand
Growth in Local Employment
①
②
③
④
⑤
⑥

Linkages

1. Growth in population leads to increased demand for goods and services.
2. Growth in population leads to increased availability of labor.
3. Growth in employment leads to increased demand for goods and services through increased wages and through intermediate demand.
4. Growth in employment leads to increased demand for labor.
5. Increase in demand for goods and services leads to growth in employment.
6. Growth in labor supply leads to growth in employment.

Fig. 8—The interaction between population and employment growth

the Muth model (Greenwood, 1973, 1975a; and Goldstein and Moses, 1973). However, subsequent research utilizing similar approaches has confirmed the interdependence of migration and employment growth (Olvey, 1970, 1972; Greenwood, 1973; Persky and Kain, 1970). Some of this work indicated that high net inmigration leads to greater growth in government and nonmanufacturing employment than in manufacturing (Greenwood, 1973). This is to be expected because manufacturing tends to serve a broader geographical market than other sectors and is therefore less dependent on local demand, less mobile, and less dependent on the location of raw materials or intermediate goods.

Wages. Together with employment opportunities, differences in wages constitute the primary determinants of migration patterns. They influence choice of destination more than generating migration; having decided to move, a migrant will choose the destination that offers the best prospects for economic improvement. "Income (and job) opportunities provide a better explanation of inmigration than they do outmigration" (Greenwood, 1975a, p. 400). Relative wages and gross *inmigration* are strongly related (Bohm, 1971; Greenwood and Gormely, 1972; and Sweetland, 1971). However, income differentials seem to have no effect on gross *outmigration* (Courchene, 1970; Lowry, 1966; Sanli, 1972; and Vanderkamp, 1971). New and repeat migrants are much more responsive to income levels at destinations than are return migrants, "possibly reflecting the influence *on the latter* of other noneconomic influences ... such as the desire to return to relatives and friends at the place of birth" (Kau and Sirmans, 1977, p. 95). The research regarding net migration exhibits similar findings. Wage differentials appear to exert a major influence on net migration flows, explaining about 10 percent of the differences in net migration rates among metropolitan areas (Fields, 1976; McInnis, 1969; Okun, 1968; and Raimon, 1962).

The prospect of higher income may be insufficient motivation if a prospective migrant doubts his ability to find employment at a proposed destination. The risk of unemployment reduces the potential financial gain (Todaro, 1969). Fields found that adding the local unemployment rate to his analysis increased its explanatory power 16 percent of the variation in net migration among metropolitan areas compared with only 10 percent for real income alone. However, Sommers and Suits (1973) found that differences in local unemployment rates explained a significant amount of the variance in net migration rates only among whites. Although inmigration is stimulated by low unemployment rates, outmigration has been insensitive to high local unemployment rates (Blanco, 1962, 1963, 1964; Lowry, 1966; and Mazek, 1969). DaVanzo (1976, p. vi), on the basis of a detailed study of household behavior, suggests a possible explanation for this apparent insensitivity of net outmigration to local unemployment:

> Household-level unemployment or dissatisfaction with a job does "push" a family to move.... Recent arrivals to an area who cannot find acceptable employment are especially prone to move again. [Thus] local economic conditions (origin unemployment rates) *do* affect outmigration, but only within the subset of people most seriously affected—the unemployed.[13]

Recent research by Alperovich, Bergsman, and Ehemann (1977), analyzing gross inmigration and outmigration flows between metropolitan areas separately, found that high local unemployment rates discouraged inmigration and encouraged outmigration. In fact, they concluded (p. 142) that the "push" incentive of changing economic conditions was as strong as the "pull" incentive. "Of two new jobs created [in an area], one is likely to be filled by a worker who otherwise would have moved away while the other is likely to be filled by an inmigrant."

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[13] This study reinforces the finds of Courchene (1970) and Masnick (1968).

The frequency with which jobs become available in an area may be more important than the unemployment rate. The rate of new hires is strongly positively related, and the layoff rate is strongly negatively related to net migration. More than half the variation in net migration rates among metropolitan areas has been explained by differences in new hire rates, layoff rates, and incomes; but only 16 percent is explained when only income and unemployment rates were included (Fields, 1976). In terms of the relative importance of wages, the unemployment rate, and employment growth, Alperovich, Bergsman, and Ehemann estimate the elasticity of inmigration in the destination city with respect to the wage rate to be 0.58, the unemployment rate elasticity to be −0.25, and the employment growth elasticity to be 0.31.

Local Public Expenditures and Taxes

States and municipalities offer diverse arrays of transfer payments and social, educational, police, fire, health, and community services. The services provided and the taxes levied to finance them vary widely among cities.

Transfer Payments. Perhaps the most influential aspect of local government behavior on patterns of migration has been the provision of welfare payments. However, the effect has not been in the total volume of migration between places, but upon the migration behavior of minorities and the poor.

High local welfare payments have very little influence on net migration (Gallaway et al., 1967; Kohn and Gallaway, 1973-1974; and Sommers and Suits, 1973).

Blacks and whites respond differently to welfare payments, a result of their income differences. Generous welfare payments at a given locale tends to be accompanied by fairly high levels of positive net migration by blacks but low levels by whites, particularly among young migrants (Cebula, 1974a, 1974b; Pack, 1973; Sommers and Suits, 1973; Cebula et al., 1973; and DeJong and Donnelly, 1973). Cebula hypothesizes that whites may view high transfer payments as "indicative on average of a greater degree of income redistribution and . . . to gravitate . . . to areas of lower welfare benefits" (Cebula, 1974b, p. 91). There is also some evidence that migrant response to transfers may have changed somewhat in recent years. For example, Glantz (1973) found that welfare benefits contributed significantly to the explanation of interregional net migration flows between 1965 and 1970, but not to migration flows during the 1955-60 period.[13] He suggests that this shift may be due to increased knowledge about welfare benefits by potential migrants in more recent years, although there is no empirical basis for this assertion.

Although several studies have found that level of welfare payments and net migration are positively correlated, their findings do not necessarily mean that low income migrants move to such places as New York City as welfare seekers, drawn by generous public assistance allowances. Indeed, a Rand Corporation study found that needy newcomers start using the welfare system only after a delay, which may reflect discouragement at not finding work rather than motivation for moving (DeFerranti et al., 1974). Other studies tend to corroborate this point.[14] The welfare seeking migrant appears to be a myth. Public assistance reduces the tendency of poor families to leave the city and leads to a growing concentration of welfare recipients in cities because of low outmigration (Long and Heltman, 1976). The relationship between the migration patterns of the poor and the level of welfare payments is by no means one way. In areas where the poor are concentrated, there will be political pressure to increase welfare payments (Kumar, 1977; Sommers and Suits, 1973; and Ziegler, 1976).

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[13] Glantz (1973) specifies welfare benefits in terms of the benefits a household is likely to receive. He uses as his measure "total welfare paid out in a locality relative to the locality's economically disadvantaged population."

Local Expenditures. High outlays for public services appear to induce inmigration and deter outmigration, all else being equal.[15] Among the local public services that exert the strongest attraction on migrants, both black and white, appear to be high expenditures on education (Cebula, 1974b; Pack 1973). The exception to this rule appears to be wealthy households, which seem to prefer locations with low public expenditure levels, perhaps in light of the redistributive tendencies to such programs.[16] High per capita local government expenditures also tend to discourage residents from migrating to other cities (Greenwood and Sweetland, 1972). Migration also influences local expenditures. Greene (1977, p. 91) found that net inmigration to cities had "a positive and significant impact on local school expenditures (per full time student)."

Black and white migrants respond differently to local public expenditures. Black migrants tend to be attracted to areas that offer high levels of public service, and white migrants tend to be repelled. For example, Cebula (1974a, 1974b) found that a 10 percent increase in state expenditures was accompanied by a 6 percent increase in black inmigration but a decline of approximately 0.4 percent in white inmigration. However, he suggests that the effect of public expenditures are "a priori unknown [because] higher spending levels may imply not only higher benefits but higher costs [taxes] as well" (Cebula, 1974b, p. 91).

Local Taxes. The net flow of white migrants avoids areas with high tax rates, while that of blacks appears not to, a difference that is also attributable to income differences (Pack, 1973). Cebula (1974b) observes a negative coefficient for taxes with respect to net white migration, an effect that declines with migrant age. Black migrants appear much less sensitive to local tax variations. Cebula (1974a, 1974b) finds that the property tax has an insignificant effect on total net black inmigration. He suggests the low incidence of property ownership among blacks as one explanation. The high correlation between local tax rates and local expenditures makes it difficult to separate their influence on migration.

[14] Ostow and Dutka (1975, p. 76), for example, found that the median preacceptance residency period for welfare household heads who have migrated to New York City was three years, "which suggests a failed attempt at self-maintenance rather than inmigration for the purpose of gaining prompt access to the state's liberal welfare system." See also Long (1974) and Reischauer (1971).

[15] Greenwood and Sweetland (1972, p. 672) conclude from their empirical analysis of data on 17 SMSAs that "the greater is the differential in government expenditures per capita between two SMSAs, the greater is the migration from the area of lower benefits to the area of higher ones, all else being equal."

[16] For example, Greenwood and Sweetland (1972) find that poor households tend to be drawn to sites with substantial public services at rates higher than other income groups because noneducational public services offer a greater increment to the real income of low income families than of wealthier ones.

AMENITIES

Amenities appear to be less important than economic conditions in attracting migrants, but they nevertheless exert some influence. Migrants move toward areas with warm weather and away from polluted areas (Cebula, 1974a, 1974b; Cebula and Vedder, 1973, 1976; Graves, 1976; Greenwood and Gormely, 1972; and Kau and Sirmans, 1977). In fact, extreme climates—very hot in summer or very cold in winter—discourage inmigration and encourage outmigration (Alperovich, Bergsman, and Ehemann, 1977). Limited available evidence also suggests a differential response of whites and blacks to high levels of particulates in the air. For example, Cebula (1974a) found pollution exerted an insignificant effect on black migration but a highly significant and strongly negative influence on whites, a difference that again may be attributable to income differences between the two groups. Higher income households may try to "buy" a cleaner environment. Migrants also prefer small metropolitan areas, if they are located close to large (over 1 million population) cities (Alperovich, Bergsman, and Ehemann, 1977).

The effect of amenities on growth is more complicated than that uncovered in the few studies cited above. Wages in attractive cities are less than in less well-endowed ones because workers require compensation for living in an unattractive area. Lower wages make firms more competitive, allowing rapid expansion of output, employment, and thus more inmigration and reduced outmigration from the city in which the firm is located. Although the primary effect of amenities through directly attracting migrant households undoubtedly predominates, the secondary effect, through the business sector, should be taken into consideration.

Metropolitan wage levels are positively related to city size, reflecting the disamenities associated with size (Goldfarb and Yezer, 1976; Hoch, 1972). They are also inversely related to the level of air pollution and climate (Izraeli, 1973). Further research is needed to estimate the importance of these and other amenities on the migration process.

Past Migration

The information available to a prospective migrant about a location heavily influences his choice of destination. Information is more sparse about more distant points so migrants are less likely to move far. Friends and relatives who have preceded constitute an important source of information (Nelson, 1959), especially among less-educated migrants. Previous migrants may provide shelter, subsistence, and job information to newcomers (Shaw, 1975). This results in "chains of moves," which may delay the response of migratory patterns to changing economic conditions. A number of studies emphasize the influence of past migratory settlement on the shape of current flows (Fabricant, 1967, 1970; Greenwood, 1968, 1970; and Rogers, 1968). One study estimates that a 10 percent increase in cumulative past inmigration will increase subsequent inmigration in any period by 3 percent, all other factors being the same (Alperovich, Bergsman, and Ehemann, 1977). Inmigration rates in adjacent cities also increase the local rate.

Distance

Distance impedes the flow of population between any two points so that the likelihood of a move between two locations decays with the distance between those points. Among the strongest regularities in migration patterns is the rapid decay of migrant flows with increasing distance from a given origin.[17]

The distance a migrant will travel appears to be systematically related to his education (Suval and Hamilton, 1965; Schwartz, 1973; Folger and Nam, 1967). However, when age is held constant, no relation between household income and distance is apparent (O'Neil, 1970). It may be, however, that better-educated migrants are fairly young, so that education attainment is not reflected in income differences. Workers of higher occupational status also tend to migrate greater distances than lower skilled workers (Rose, 1958). Distance has the greatest deterrent effect on first-time migrants who have considerably less information accumulated than repeat or return migrants (Kau and Sirmans, 1977). There is evidence that at least some of the inhibiting effect of distance is due to resultant costs of separation from family and friends (Greenwood, 1968; Fabricant, 1970).

SUMMARY

Patterns of intermetropolitan migration have been shaped by factors that have acted selectively upon the population, with the results that migrants tend to be young, fairly well-educated, and skilled, and have a history of mobility.

Employment conditions and positive net migration are strongly linked. However, the role of exogenous factors—including amenities and climate—appears more important in explaining population growth than in explaining employment growth. Economic development is more heavily dependent upon the expansion of population through inmigration than inmigration is on the expansion of job opportunities. Migration flows of the poor offer less inducement to business.

Migrants have been attracted to metropolitan areas offering high incomes and enjoying low unemployment rates. Loss of a job is, in fact, an important factor in the decision to migrate. Migrants are also attracted by areas with high turnover rates, apparently feeling that this will make finding a job easier.

The local public sector also affects migration patterns. All else being equal, high outlays for public services generally induce inmigration and deter outmigration. Minority and poor households are concentrated in cities offering substantial welfare payments and high levels of nonwelfare public services because of reduced outmigration. High welfare payments do not appear to offer a strong inducement for inmigration. Racial differences are apparent in the response of migrants to property taxes. White migrants tend to shun areas where tax rates are high, but black migrants appear much less sensitive to local tax variations. This disparity may be due to differences in income levels or the rate of homeownership between the two groups. Migrants are attracted by warm weather and to smaller metropolitan areas but avoid cities suffering from polluted air and areas that are too far away from large metropolitan centers. Areas well endowed with amenities and with warm climates also have lower prevailing wages than others. These lower wages may stimulate economic development. Past migration patterns are also influential, through information networks, and distance acts as a deterrent.

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[17] This distance decay is generally attributed to the monetary and psychic costs of moving and the unavailability of information pertaining to more distant destinations (see Greenwood, 1968, 1970, and 1972; Lowry, 1966; and Sjaastad, 1962).

V. FEDERAL POLICIES AFFECTING MIGRATION

The underlying migratory trends—from the North to the South and West, and from large metropolitan areas to smaller ones—have generally been accentuated by federal policies. The major avenues of federal influence through the factors identified in Sec. IV are:

Factor	*Federal Policies*
Economic conditions	Expenditure, tax, and regulatory policies that act on the business sector, and policies that influence regional cost of living differences.
Transfer payments, local expenditures, and local taxes	Federal transfer payments and federal assistance to local governments.
Amenities	National parks, Corps of Engineers projects, and environmental protection.

In addition, several other policies have acted directly on the migration policies. These are discussed below.

THE EFFECTS OF FEDERAL POLICIES ON LOCAL ECONOMIC CONDITIONS[1]

Federal policies have generally stimulated economic growth in the South and West, and in new, smaller cities at the expense of older, larger cities in the Northeast. This consistent direction of effect has resulted from the predisposition of federal agencies to assist the process of growth and new development rather than redevelopment and rehabilitation. This tendency extends through federal expenditure programs, the federal tax structure, and regulatory activities. In some cases, it has been an intended outcome of programs, but often it has been inadvertent, the result of policies aimed at national objectives that are not directly related to economic development. The result has been that firms in growing areas have received explicit and implicit subsidies that have placed them at a competitive advantage relative to firms in older, more established metropolitan areas. Some firms have been induced to relocate to take advantage of those subsidies.

Federal policies were not the major force in this process. They reinforced the underlying market forces and have therefore increased the speed of deconcentration. In some instances they have influenced the process qualitatively, leading to the concentration of the economically disadvantaged in declining metropolitan areas.

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[1] This subsection summarizes the findings of the *Economic Development* report, and documentation of the findings is provided in that report.

Deconcentration of economic activity has resulted, in large part, from technical development: First, the increasing specialization in manufacturing has reduced the share of raw materials in total costs so that some industries can move away from sources of raw materials—particularly coal and iron ore—without incurring high transportation costs. The process has drawn manufacturing away from the old manufacturing belt in the Northeast and Midwest. Second, the increase in truck transportation has allowed firms to locate away from established rail networks. Third, the development of linear flow plants, encouraged by the steady decline in real energy costs (until recently) and the growth of industrial air conditioning, has led to the construction of modern plants in the South. The distribution of nonagricultural jobs among regions now reflects the regional distribution of population more closely than ever before.

Federal Expenditure Policies

Federal programs, involving direct outlays, have encouraged economic development in growing areas in the South and West. Perhaps the most important of these has been the interstate highway program. Without the commitment of the federal government, many highways would not have been constructed. The Northeast region developed an extensive system of turnpikes without federal funds, but Southern and Mountain states would not have been able to afford their own highways. The Highway Trust Fund's ability to raise revenue from a variety of sources and to redistribute funds among regions played a major role in shaping regional employment growth patterns.

The federal highway system has a substantially subsidized economic growth in the South and Mountain regions. This subsidy is financed by the users of the busy highways in large metropolitan areas in the Northeast. For example, for each dollar that the state paid into the Highway Trust Fund between 1957 and 1972, Idaho received $1.83 in apportionments, Louisiana $1.21, Montana $2.44, Nevada $1.98, New Mexico $1.52, and Wyoming $2.71. Massachusetts and Michigan received only 77 cents for each dollar they contributed, New Jersey 66 cents, New York 80 cents, and Pennsylvania 79 cents. Many of the highways in the latter states were constructed before federal funds were available. Without the highway system, many urban areas in growth regions would have remained inaccessible.

The highway system has also contributed substantially to growth in remote nonmetropolitan areas. Population growth in counties served by the network has been twice the rate in less accessible counties (Council on Environmental Quality, 1976). Not only are some of these counties becoming the suburbs' suburbs, but they are also sustaining self-contained development based upon truck transportation.

Corps of Engineers projects have extended an inland waterway system in the South and opened up landlocked cities to national and even international markets. The location of military bases has brought the massive purchasing power of defense payrolls to stimulate growth in the South and West. Federal grants have also been available for the construction of the infrastructure necessary to sustain economic development, including roads, industrial parks, and sewers.

Federal Tax Structure

Several aspects of the tax structure have also favored new investments. Investments in new plant and facilities have offered much more generous tax advantages than comparable investments in rehabilitation, although much of the discrepancy was removed by the Tax Reform Act of 1976. Tax exemption of industrial development bonds has reduced the cost of creating suitable new sites for economic expansion. Investment tax credits have provided additional subsidies to firms in areas where business is expanding but have provided little incentive to established firms in slower growing areas.

Federal Regulation

Although the locational effects of regulatory activity are poorly understood, federal actions in this field may have worked against the Northeast and larger metropolitan centers. Federal regulation of freight rates has stimulated the expansion of trucking at the expense of railroads, which has worked against the rail based industries in the Northeast. It has also raised the average cost of transportation, particularly long haul transportation, which encourages firms to relocate nearer to their markets and therefore accelerates regional decentralization. The regulation of natural gas prices has led to a sharp curtailment in its availability to commercial users outside producing states. Energy costs in the Northeast are substantially above costs in other regions.

The extensive federal commitment to environmental protection and occupational safety and health through regulation and grants may also have distinct regional effects. It may be more expensive to modify older manufacturing equipment than new to comply with these standards. Larger metropolitan areas tend to experience greater difficulty in meeting air quality standards.

Federal Policies Affecting Regional Cost of Living Differentials

Migrants respond to real income differences, which are a function of price as well as wage differentials (Izraeli, 1973a). Several federal policies have contributed to regional differences in the cost of living, which may be as much as 30 percent. For example, the Bureau of Labor Statistics estimated that in 1975 a family of four would have needed $16,725 in annual income to attain an "intermediate" standard of living in Boston, but only $12,834 in Austin, Texas.

Policies that affect these differences include the regulation of energy prices that have left those in the Northeast with high utility bills (*Economic Development*, Sec. VI). For example, in 1970, a typical residential fuel bill for 250 kwh in Seattle was only $4.40, in Los Angeles, $5.68, in Denver, $7.19, in Boston, $9.50, and in New York, $10.09. Although the typical family spends only 7 percent of its income on fuel and utilities, variations of this magnitude would be considered by potential migrants. Other relevant policies include minimum wage legislation and transportation rate regulation. However, there is no evidence concerning how they influence price differentials, and further research should be undertaken to analyze the causes and affects of price differences.

THE EFFECTS OF FEDERAL POLICIES ON TRANSFER PAYMENTS, LOCAL EXPENDITURES, AND LOCAL TAXES

Federal programs that act upon the local public sector have also influenced migratory patterns. The best documented, and perhaps the most important, are federal transfer payments. Although some programs are channelled through the local public sector, others flow directly to individuals. Less is known about the extent of federal influence through the effects of programs and policies on the local public sector.[a]

Transfer Payments

The importance of transfer payments in determining personal income has risen dramatically. In 1965, $40 billion of public assistance, unemployment compensation, and retirement benefits were distributed by federal, state, and local agencies, 7.5 percent of total personal income. By 1975, transfers had reached $174 billion, or 14 percent of total personal income, of which $100 billion was targeted to low income households. Retirement constituted the major share, but the most rapid increase was in unemployment compensation—$2.26 billion in 1965, $17.8 billion in 1975 (Table 5). These transfer programs have affected migration in a number of ways.

Increased unemployment compensation benefits have two possibly countervailing effects. On one hand, benefits reduce interarea income differentials, reducing the migration incentive. On the other, higher benefits encourage the unemployed to search longer for employment, which may encourage migration. Regional variations in unemployment compensation rates and conditions may encourage migration toward high benefit areas, but this effect is likely to be slight.

Because the purpose of these programs is to redistribute from rich to poor, to the extent that the programs have been successful there has been a tendency for regional income differentials to narrow. This has slowed growth in high income regions and stimulated it in low income regions. There are considerable regional variations in the share of personal income that comes from transfers.

Social security payments have allowed the aged to select where they wish to live during their retirement rather than rely upon their families for support. The high annual per capita retirement payments to the Southeast attest to the attraction of the sunbelt to retired people. Florida accounted for 30 percent of the population growth between 1970 and 1975 in the sunbelt—the South Atlantic and East and West South Central census divisions.

Welfare payments have provided assistance to the poor, in both urban and rural areas, and increased their demand for goods and services. Although the federal contribution to welfare is by far the largest part of public programs for the poor, welfare payments are not uniform nationwide, which has significantly affected interregional and rural-urban migration habits of the poor. Table 6 shows the federal and local contributions to welfare payments per poor person for these two regions. In the Middle Atlantic region, local authorities contribute $1149 per poor person but in the South Central only $122. The variation in federal contributions is less, ranging from $1300 to $693 per poor person in these two regions. Supporting large welfare populations in those jurisdictions in which they are concentrated leads to high local taxes, hastening the departure of more affluent families and contributing to the secular decline of the Northeast.

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[a] The effect of federal programs on local services and tax rates is discussed in *Fiscal Conditions*. Some of the relevant findings are discussed in Section VIII.

Table 5

U.S. TRANSFER PAYMENTS AND TOTAL PERSONAL INCOME, 1965, 1970, 1975[a]

	1965	1970	1975	Percent Increase 1965-1975
Total personal income (billions)	539	808	1258	133
Per capita income	2785	3966	5903	112
Total transfer payments (billions)	40	79	174	335
(as percent of personal income)	(7.4)	(9.7)	(13.9)	88
Public assistance[a]	4.3	9.9	21.5	400
Unemployment compensation[b]	2.3	4.1	17.8	674
Retirement and other[c]	33.4	65.1	134.5	303

SOURCE: Vernon Renshaw and Howard L. Friedenberg, "Transfer Payments: Regional Patterns, 1965-1975," *Survey of Current Business*, May 1977, p. 16.

[a] Consists of federal, state, and local direct relief (including supplementary security income payments), food stamp payments, and payments made through several other relief programs such as refugee assistance.

[b] Consists of payments made to unemployed workers through state, federal, and railroad unemployment insurance programs.

[c] Includes retirement and disability payments made through social security programs and through railroad, military, and federal civilian retirement programs; medicare, educational assistance to veterans and others; and miscellaneous transfers, such as business transfer payments.

Federal Transactions with Local Governments

Regional differences in the quality and type of local public services and the tax rates necessary to pay for them have been influenced by federal policies in a number of ways. However, the magnitude of the federal contribution to these differences is not well understood. Federal grants-in-aid provide a growing share of local resources (see Sec. VIII below). In 1975, the federal government gave grants to state and local governments worth $221 per capita, but the distribution varied widely among areas. Wyoming received $380 per capita and Indiana received only $139 (Table 7). The extent to which these subsidies influence the attractiveness of different regions is unclear.

Another aspect of federal assistance to the local public sector that may have significantly affected migration patterns is the tendency for federal programs aimed at the economically disadvantaged to operate through the local public sector. Housing, special education and training, public sector employment, and health programs are examples. The gain from migrating from a declining area to a more promising labor market is reduced through these programs, which may partially explain the low rate of migration of the poor noted in Sec. III. In view of the rapid increase in these programs, this topic merits further research.

Table 6

PER CAPITA FEDERAL INCOME TRANSFER PAYMENTS BY REGION, FY1975, AND FEDERAL AND LOCAL WELFARE PAYMENTS, FY1976

Region[a]	Welfare Programs Per Capita FY1975[b] (dollars)	Retirement Programs Per Capita FY1975[c] (dollars)	Local Spending Per Poor Person FY1976 (dollars)	Federal Spending Per Poor Person FY1976 (dollars)	Percent of Population Below Poverty Level 1975
New England	118	402	1034	1316	8.5
Mid-Atlantic	143	403	1149	1300	10.5
East North Central	101	359	767	1097	8.7
West North Central	83	403	363	672	10.6
South Atlantic	102	426	211	693	13.4
South Central	124	368	122	580	19.3
Mountain	82	385	672	540	12.4
Pacific	132	289	850	951	11.5
Nation	115	392	529	860	12.1

SOURCE: The *National Journal*, June 26, 1976. p. 884, and January 8, 1977, p. 47, p. 50. Reprinted by permission of the *National Journal*.

[a] The regional definition corresponds to the census definition of divisions with the exception of the South Central region, which includes both the East and West South Central divisions.

[b] Welfare programs include: Medicaid ($7.4 billion total); Aid to Families with Dependent Children ($5.4 billion total); food stamps ($4.5 billion total); supplementary security income for poor persons who are blind or disabled ($4.2 billion total); grants to states for social services programs for their poor residents ($2.0 billion total); and unemployment insurance compensation ($1.5 billion total).

[c] Retirement programs include: payments from the social security trust fund to retired persons ($40.9 billion total); to dependents of wage earners who have died ($14.5 billion total); and to disabled persons ($7.5 billion total); payments to retired civilian government employees ($7.1 billion total); payments to retired military personnel ($6.1 billion total); payments to retired railroad personnel ($3.1 billion total); and payments to disabled veterans ($5.7 billion total).

Table 7

PER CAPITA AMOUNTS OF THE MAJOR SOURCES OF STATE AND LOCAL GENERAL REVENUE, 1975

State	Total	Government	Taxes	Miscellaneous
United States Average	$1071	$ 221	$664	$186
Alabama	827	224	415	189
Alaska	2291	735	842	714
Arizona	1024	189	658	176
Arkansas	760	221	405	134
California	1316	245	869	202
Colorado	1110	236	631	244
Connecticut	1011	190	697	124
Delaware	1201	225	727	248
District of Columbia	1952	1001	759	193
Florida	879	159	521	199
Georgia	937	232	508	198
Hawaii	1435	337	852	246
Idaho	936	231	528	177
Illinois	1077	196	730	151
Indiana	910	139	580	191
Iowa	1025	201	637	186
Kansas	971	188	598	185
Kentucky	894	229	497	168
Louisiana	993	224	566	203
Maine	948	256	571	121
Maryland	1145	219	728	199
Massachusetts	1171	223	814	135
Michigan	1129	232	682	215
Minnesota	1241	245	754	241
Mississippi	857	245	446	165
Missouri	839	175	523	141
Montana	1126	297	612	217
Nebraska	985	190	577	218
Nevada	1289	230	770	289
New Hampshire	863	200	525	138
New Jersey	1082	191	725	165
New Mexico	1102	299	548	256
New York	1539	276	1025	238
North Carolina	844	223	485	135
North Dakota	1183	254	613	316
Ohio	871	163	533	172
Oklahoma	905	231	482	194
Oregon	1189	315	635	239
Pennsylvania	975	201	636	137
Rhode Island	1037	248	644	142
South Carolina	824	198	446	180
South Dakota	1008	280	542	184
Tennessee	814	200	451	163
Texas	867	179	515	172
Utah	948	254	506	188
Vermont	1214	335	698	178
Virginia	929	200	563	166
Washington	1168	250	676	242
West Virginia	938	280	532	125
Wisconsin	1101	199	719	182
Wyoming	1387	380	695	311

SOURCE: U.S. Bureau of the Census, *State Government Finances in 1974-75*, Washington, D.C., 1976.

THE EFFECTS OF FEDERAL POLICIES ON AMENITIES[3]

Federal policies influence the level of amenities in different locations in a number of ways. The National Park Service and Corps of Engineers activities provide recreational open space and environmental protection programs.

Recreation

More than half of the U.S. population lives within 50 miles of an ocean, the Gulf of Mexico, or the Great Lakes. That pattern of settlement is difficult to explain simply in terms of the economic advantage of harbors. Outdoor recreation facilities may influence residential location decisions especially among middle and upper income groups. They represent a disproportionately large share of visitors to national parks, although whether this is a result of a more developed taste for outdoor recreation or easier access through higher rates of automobile ownership remains unclear (BOR, 1972). Because these households are the most mobile and the most skilled and represent the highest consumer expenditures, their attraction to open space may be important in determining interregional growth patterns.

The regional distribution of federally administered outdoor recreation areas is uneven. In 1950, three-quarters of all federal recreation lands were in the West, 1.4 percent in the Northeast, 5.7 percent in the North Central region, and 21.4 percent in the South. This is not the result of deliberate regional policy but rather has arisen as a result of historical accident.[4] The policy of purchasing private lands for recreational use, begun in the early 1960s, has changed the distribution so that the West now only has 65 percent, the Northeast 5.2 percent, the North Central 11.3 percent, and the South 26.9 percent (Siehl, 1977). However, other federal actions have continued the regional imbalance. The Corps of Engineers, whose projects often include susbtantial recreation benefits, spent $11.4 billion between 1950 and 1975 in the South, compared with only $6.6 billion in the North Central, $6.3 billion in the West, and $2.2 billion in the Northeast (Viessman and Simmons, 1977). Including water projects by the Corps, the Bureau of Reclamation, Soil Conservation Service, and the TVA, the South has gained $220 per capita, the West $377, the North Central $136, and the Northeast $57. As well as offering recreational amenities, many of these Corps projects have been directed toward flood control, which has opened up many acres of land for residential and economic development.

Environmental Protection

For nearly a decade the federal government has conducted extensive programs to combat environmental pollution, particularly air and water pollution. There has been little analysis of the potential locational effects. These programs are likely to have two conflicting influences. Compliance will raise costs to industry particularly in large metropolitan areas where achieving federal standards is especially difficult. At the same time, the cleaner air will make the city more attractive as a place to live. However, these programs place heavy financial burdens on local governments. We cannot, given the present state of the arts, predict the net effect of these influences.

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[3] The influence of amenities in residential location is discussed in more detail in Section VII.

[4] Many parks have been created around unique natural phenomena (Yellowstone and Grand Canyon are examples). Others have arisen because of the private donation of land (Grand Teton) or because of the closing of military facilities (Gateway, New York).

THE DIRECT EFFECTS OF FEDERAL POLICIES ON MIGRATION

The federal government has undertaken a limited number of programs to influence the migration process directly. During the 1960s the Manpower Development and Training Act provided cash assistance to workers wishing to move from distressed areas, which usually meant the cost of bus tickets from rural Appalachia to large northern cities. This assistance had little net effect, with many of those assisted returning to their origin within a few months. The Trade Act of 1974 does provide subsidies of up to $1000 to a household for job search and moving expenses. The Department of Labor has experimented with this program in the Southeast. Although no final evaluations have been made, preliminary results indicate that the program is of some assistance to semi-skilled workers, usually moving from small towns to larger metropolitan areas.[5]

The Department of Defense has also influenced migration patterns by moving military personnel among bases. It is not clear how many personnel have returned to their origin when they resume civilian life, but migration rates among the military are the highest of any occupational group. The concentration of military bases in the South may have contributed to outmigration from the Northeast.

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[5] See *Business Week*, November 14, 1977.

VI. RECENT TRENDS IN SUBURBANIZATION

The preceding three sections have discussed intermetropolitan population shifts and the role of federal policies in the process. In this and the following two sections, suburbanization is analyzed: This section outlines recent trends, Sec. VII describes the factors that have influenced suburbanization, and Sec. VIII examines how federal policies have encouraged this movement.

Since World War II, the population has grown more rapidly in the suburbs than in central cities in metropolitan areas. This disparity in growth rates has been accompanied by a growing concentration of minorities and the economically disadvantaged in central cities. What has caused this widening gap is the subject of some controversy. This section examines, first, recent trends in the general process of metropolitan decentralization and, second, the differences in population characteristics between cities and the suburbs.

METROPOLITAN DECENTRALIZATION

Between 1950 and 1973, the share of the nation's population living in metropolitan areas rose from 62.5 percent to 68.1 percent, and the share residing in central cities declined by 5.2 percent (Table 8). Between 1960 and 1970, the suburban population overtook the central city population. Central city decline since 1970 is most pronounced in Northeastern and North Central cities and in large SMSAs (Table 9). However, the *disparity* in growth rates between central cities and suburbs has been most pronounced in the South and least in the West.

Between 1959 and 1970, urban land area expanded by 197 percent while population grew by only 71 percent (Table 10). Density has declined sharply. In 1950, there were 7786 central city residents per square mile, 146 percent more than in the

Table 8

PERCENT DISTRIBUTION OF POPULATION BY RESIDENCE, 1950-1973

Residence	1950	1960	1970	1973	Change 1950-1974
Metropolitan areas	62.5	66.7	68.7	68.1	+ 5.6
Central cities	35.5	33.4	31.6	30.3	- 5.2
Suburban areas	27.0	33.3	37.0	37.8	+10.8
Nonmetropolitan areas	37.4	33.3	31.4	31.9	- 5.5
Total[a]	100.0	100.0	100.0	100.0	0
Total population (millions)	151.3	179.3	203.2	209.8	+38.7

SOURCE: Bureau of the Census, *Statistical Abstract of the United States, 1976*, U.S. Department of Commerce, Washington, D.C., 1976.

[a] Totals do not add because of rounding.

Table 9

POPULATION CHANGE BETWEEN 1970 AND 1974 BY RESIDENCE
(In percent)

Residence	All Regions	Northeast	North Central	South	West
All areas	4.1	1.2	1.3	6.7	8.0
Metropolitan areas	3.6	0.2	1.0	7.6	7.1
Inside central cities	-1.9	-4.7	-5.5	-0.1	4.4
Outside central cities	8.4	4.0	6.4	15.7	9.0
Nonmetropolitan areas	5.0	5.1	1.8	5.4	11.6

SOURCE: U.S. Bureau of the Census, *Current Population Reports*, Series P-23, No. 55, "Social and Economic Characteristics of the Metropolitan and Nonmetropolitan Population: 1974 and 1970," Washington, D.C., 1975, Table 3.

Table 10

GROSS RESIDENTIAL DENSITIES, POPULATION, AND AREA IN ALL U.S. URBANIZED AREAS, 1950-70

	1950	1960	1970
Population Per Square Mile			
Total urbanized areas	5,408	3,837	3,376
Inside central cities	7,786	5,502	4,463
Outside central cities	3,167	2,622	2,627
Total Population (000)			
Total urbanized areas	69,252	95,834	118,447
Inside central cities	48,377	57,966	63,922
Outside central cities	20,875	37,868	54,525
Percentage Distribution of Population			
Total urbanized areas	100.0	100.0	100.0
Inside central cities	69.9	60.5	54.0
Outside central cities	30.1	39.5	46.0
Land Area in Square Miles (000)			
Total urbanized areas	12.8	25.0	35.1
Inside central cities	6.2	10.5	14.3
Outside central cities	6.6	14.4	20.8

SOURCE: Donald L. Foley, "Accessibility in the Metropolitan Environment," in Amos H. Hawley and Vincent P. Rock (eds.), *Metropolitan America in Contemporary Perspective*, Sage Publications Inc., Beverly Hills, California, 1975, p. 163.

suburbs. By 1970, there were only 4463 central city residents per square mile, 70 percent more than in the suburbs.

Some cities have avoided the loss of their more affluent residents by annexing their suburbs, an option largely limited to Southern and Western states. Indeed, the rapid growth of central city populations in the South and West during the 1960s has been due, in part, to their ability to annex rapidly growing suburban areas. These boundary changes make a comparison of the growth rates among cities difficult and misleading.

The growth rate of central city populations in the South more than tripled through annexation, and in the West it almost doubled. Table 11 shows central city population growth between 1960 and 1970 with and without annexation in the four major census regions.

Table 11

PERCENT CHANGE IN POPULATION OF CENTRAL CITIES THROUGH ANNEXATION: BY REGION 1960-1970

Region	With Annexation	Without Annexation
Total	5.3	0.5
Northeast	-1.9	-2.1
Midwest	-0.3	-4.6
South	11.2	3.2
West	18.0	9.9

SOURCE: Bureau of the Census, *Census of Population and Housing: 1970*, Final Report PHC(2)-1, U.S. Department of Commerce, Washington, D.C., 1971, Table A.

POPULATION CHARACTERISTICS

Urban decentralization has not proceeded at an equal rate for all groups of the population. Many metropolitan areas are characterized by central cities that house a disproportionate share of poor and minority households, while higher income households are concentrated in the suburbs. This has led to fiscal disparities among cities and other jurisdictions. Cities face a growing demand for social services and a shrinking tax base to cover the cost.

Suburbanization has been primarily a white, middle income process. Income grew more rapidly in suburban areas between 1959 and 1969 (32 percent) than in central cities (23 percent). By 1970, average household income in large central cities was only 87 percent of that in suburban areas, a decline from 105 percent in 1960. The extent of city/suburban income disparity varied by geographic region: 79 percent in the Northeast, 84 percent in the Midwest, 93 percent in the West, and 96 percent in the South. In addition, the incidence of poverty in central cities is twice as high as in suburban areas. In 1975, 15.0 percent of central city residents lived below the federally defined poverty level, while only 7.6 percent of the suburban population had such a low standard of living (Table 12). In 1959, only 26.9 percent of poor people lived in central cities. By 1974, the figure was 36.3 percent.

Table 12

PERCENT POPULATION BELOW POVERTY LEVEL BY RACE AND PLACE OF RESIDENCE, 1975

Place of Residence	All Races	White	Black
Nation	12.3	9.7	31.3
Inside SMSAs	10.8	8.2	27.6
Inside central cities	15.0	10.8	29.1
Suburbs	7.6	6.7	22.5

SOURCE: National League of Cities, *State of the Cities*, Washington, D.C., 1977, p. 38.

The increasing concentration of the poor in central cities has received considerable attention. There is also a recent trend for high-income households to locate in central locations. Lipton (1977) examined income and educational attainment in 1960 and 1970 by census tract in the 20 largest metropolitan areas. He found that in some cities—Boston, Chicago, Detroit, New York, St. Louis, and Washington, D.C.—the number of tracts in the core area (within two miles of the central business district) in which median income or educational attainment exceeded the metropolitan average actually increased during this period. The high income, well-educated population was growing. Another group of cities showed a decline at the core but improvement in adjacent areas (Baltimore, Los Angeles, Milwaukee, Minneapolis, Philadelphia, Pittsburgh, and Seattle). Finally, a third group showed stagnation or deteriorating cores during this period (Atlanta, Cleveland, Dallas, Houston, Newark, and San Francisco).

The data are far too tentative to conclude with any degree of certainty that central cities are reemerging from their steady decline, but they do indicate that *declines in population and employment are not unambiguous signs of urban distress*. Large cities that lost the most jobs, such as New York and Boston, seem to have attracted some high income households more successfully than growth cities such as Dallas and Houston.

The general decline in the share of the urban population in central cities has been accompanied by a considerable change in the racial composition of central city and suburban populations. In 1920, central cities contained 65.9 percent of the white metropolitan population and 67.2 percent of the black metropolitan population. By 1970, central cities contained only 42.3 percent of the white population but 76.9 percent of the black population.

The proportion of the white urban population inhabiting the central cities declined in every region of the country during this period but was most rapid in the North Central region. The black population of central cities grew in all regions but grew more slowly than the black suburban population in the South and West. In all regions except the West, black nonmetropolitan population declined.

The difference between white and black population growth rates in central cities has been most marked in large cities. Between 1960 and 1970, in central cities of SMSAs whose population exceeded 2 million the white population declined by 13.4 percent, while the black population grew by 6.7 percent (Table 13). In the suburbs, black population growth outpaced white population growth only in these

Table 13

PERCENT POPULATION CHANGE IN METROPOLITAN AREAS, 1960 TO 1970, INSIDE AND OUTSIDE CENTRAL CITY BY RACE AND SIZE OF SMSA

SMSA Population	Central City		Outside Central City	
	White	Black	White	Black
Total	- 1.2	32.6	27.5	29.0
2,000,000 or more	-13.4	36.7	23.9	58.9
1,000,000 to 1,999,999	3.3	39.1	41.1	37.8
500,000 to 999,999	3.6	25.9	30.7	7.9
250,000 to 499,999	6.7	23.8	22.3	12.0
Less than 250,000	11.0	21.0	17.4	- 2.4

SOURCE: Bureau of the Census, *Census of Population and Housing: 1970, General Demographic Trends for Metropolitan Areas, 1960 to 1970*, Final Report PHC (2)1, U.S. Department of Commerce, Washington, D.C., 1971, Table E.

large SMSAs. Comparison of growth rates of blacks and whites in the suburbs is a little misleading because of the small number of blacks in the suburbs. However, these trends do show that there is some decentralization among black households.

Segregation by race and income between city and suburban jurisdictions has grown during a period when the importance of local government has been expanding rapidly. Between 1950 and 1974, both state and local public expenditures rose about 800 percent—local from $17 billion to $139 billion and state from $11 billion to $86 billion. By comparison, federal expenditures increased approximately sixfold from $42 to $254 billion. This growth, coupled with the increasing concentration of the poor in central cities, has resulted in a sharp increase in the demands on central city services.

This rising tax burden is being shouldered by center city residents despite incomes substantially lower than those of suburbanites. Table 14 depicts actual local tax effort in the nation's 22 largest SMSAs in 1962 for central city and for suburban jurisdictions—defined as per capita tax revenue divided by per capita income. Only in San Diego did suburban tax effort exceed that of the central city. In several SMSAs, notably Philadelphia, Boston, Cincinnati, and Newark, the disparity is quite sharp. The table also presents two adjusted measures of tax effort. The first adjustment subtracts the estimated locally financed portion of expenditure for public welfare, health, and hospitals—services traditionally heavily consumed by low income families. The second adjustment subtracts all those items plus expenditures for education of children from families with incomes under $3000. These adjustments reduce the disparity of tax effort between city and suburbs and indicate the size of the fiscal burden imposed by concentration of low-income households in the nation's largest cities.

Although a large share of welfare expenditures is met from state and federal grants, the burden of health and hospital costs falls mostly on local governments (Table 15).

Expenditures and revenues are much higher in large cities than in smaller ones, although part of the difference is compensated for through intergovernmental

Table 14

MEASURES OF TAX EFFORT IN CENTRAL CITIES AND SUBURBS IN 22 LARGEST SMSAs, 1962[a]

(Per capita tax revenue, 1962, as a percent of per capita income, 1960)

SMSA	Actual Tax Revenue Cities	Actual Tax Revenue Suburbs	Adjusted Tax Revenue Cities[b]	Adjusted Tax Revenue Surburbs[b]	Adjusted Tax Revenue Cities[c]	Adjusted Tax Revenue Suburbs[c]
New York	9.5	7.5	7.8	7.0	7.3	6.8
Chicago	7.4	6.1	6.6	5.8	6.2	5.6
Los Angeles	8.4	7.0	7.3	6.0	6.8	5.6
Philadelphia	7.4	4.9	6.6	4.6	6.1	4.4
Detroit	7.5	5.7	6.2	4.9	5.5	4.6
Baltimore	6.9	4.4	6.0	4.3	5.3	3.9
Houston	5.9	5.6	5.4	5.4	4.7	4.9
Cleveland	7.4	5.2	6.1	4.4	5.5	4.2
St. Louis	7.6	5.1	5.9	4.8	5.2	4.4
Milwaukee	8.4	6.5	6.8	5.4	6.3	5.2
San Francisco	7.4	7.2	6.1	6.0	5.6	5.6
Boston	11.2	7.4	8.9	6.8	8.3	6.4
Dallas	5.7	3.7	5.2	3.1	4.8	2.7
Pittsburgh	7.2	4.9	6.8	4.7	6.3	4.5
San Diego	6.3	6.7	5.3	5.6	4.7	4.9
Seattle	5.0	3.6	4.5	3.2	4.2	2.9
Buffalo	7.5	7.0	6.2	6.2	5.7	5.9
Cincinnati	8.2	4.5	6.5	4.2	5.7	3.8
Atlanta	6.3	3.7	5.1	2.8	4.5	2.4
Minneapolis	7.0	6.5	5.3	5.6	4.8	5.3
Kansas City	6.0	5.4	5.1	5.0	4.5	4.6
Newark	12.3	7.0	9.5	6.5	8.9	6.2
Mean	7.6	5.7	6.3	5.1	5.8	4.8

Source: Dick Netzer, *Impact of the Property Tax: Its Economic Implications for Urban Problems*, paper prepared for National Commission on Urban Problems, Washington, D.C., 1968, p. 38.

[a] Data computed by and presented in Woo Sik Kee, "City-Suburban Differentials in Local Government Fiscal Effort," Regional Research Institute, West Virginia University, October 1967.

[b] Total tax revenue minus the estimated locally financed portion of expenditure for public welfare, health, and hospitals.

[c] Total tax revenue minus the estimated locally financed portion of expenditure for public welfare, health, hospitals, and for education of children in families with incomes less than $3,000.

Table 15

LOCAL GOVERNMENT DIRECT EXPENDITURE AND INTERGOVERNMENTAL GROWTH BY BUDGET FUNCTION, FY1974

Function	Local Government Direct Expenditure ($ billions, FY1976)	State and Federal Grants to Local Governments ($ billions, FY1976)	Grants as Percent of Direct Expenditure
Education	56.1	28.0	49.9
Welfare	9.6	7.0	72.9
Highways	7.3	3.2	43.8
Health and hospitals	8.5	0.9	10.6
Housing and urban renewal	3.1	2.5	80.6
All other	40.2	16.1	40.0
Total	124.7	57.7	46.3

SOURCE: U.S. Bureau of the Census, *Government Finances 1974-75*, Washington, D.C., 1976.

grants (Table 16). Perhaps the most striking discrepancies in per capita expenditures are, again, in welfare and health. Cities with populations in excess of 1 million spent $209 per capita on these services in FY 1973, but those with populations between 50,000 and 100,000 spent only $11.

There are differences in the fiscal burdens in growing and declining cities. Residents in declining cities experience higher per capita taxes and expenditures, pay their municipal workers a higher salary, and employ more municipal workers (Table 17).

Table 16

PER CAPITA REVENUES AND EXPENDITURES OF CITY GOVERNMENTS BY POPULATION SIZE, 1972-1973

	Municipalities Having a 1970 Population of					
Item	1,000,000 or more	500,000 to 999,000	300,000 to 499,999	200,000 to 299,999	100,000 to 199,999	50,000 to 99,999
General revenue	715	437	336	325	291	232
General revenue from own sources	399	263	218	205	195	166
Taxes	316	194	140	145	143	122
Property taxes	174	113	87	96	108	91
Other	141	81	53	48	34	31
Current charges	53	44	50	36	32	28
Miscellaneous	30	24	26	23	18	15
Intergovernmental revenue	315	173	118	120	96	65
From states	254	82	68	61	56	38
From federal government	56	82	42	48	33	23
General expenditure	681	426	327	324	279	229
Education	127	56	60	57	53	38
Highways	19	26	20	24	23	22
Public welfare	135	43	7	9	6	2
Hospitals	56	27	7	7	7	7
Health	18	11	4	4	3	2
Police	62	47	34	33	30	25
Fire	26	24	23	23	23	20
Sewers	20	18	24	19	15	14
Sanitation	19	14	10	15	11	8
Parks and recreation	13	22	20	20	16	14
Housing and urban renewal	36	16	14	20	15	11
All other	145	117	97	87	72	60
Gross debt outstanding	942	517	496	512	377	317

SOURCE: U.S. Bureau of the Census, *City Government Finances in 1972-73*, Series GF73-No. 4, Washington, D.C., 1974.

Table 17

FISCAL CONDITIONS IN GROWING AND DECLINING CITIES, 1965

	Population	
	Growing 1960-1970	Declining 1960-1970
Expenditures per capita[a]	$152	$264
Municipal workers per 1000 residents	8.7	13.0
Average local government wage	$812	$958
Local property tax rate	1.33%	2.54%
Household tax effort[b]	4.0%	6.7%

SOURCE: George E. Peterson, "Finance," in William Gorham and Nathan Glazer (eds.), *The Urban Predicament*, The Urban Institute, Washington, D.C., 1976.

[a] Total local expenditure divided by population.

[b] Local taxes as a percent of median household income.

VII. EXPLAINING SUBURBANIZATION

The urban population has become predominantly suburban since World War II. Theorists linked selection of a place to live within a metropolitan area with accessibility to the place of work and income. Thus, suburbanization was explained by the reduction in transportation costs resulting from the increase in automobile ownership. More recently, emphasis has shifted to two other factors: First, the quality of residential environment in the central city is poor; second, differences among urban jurisdictions in tax rates and in the quality of public services have encouraged higher income households to move to the suburbs to minimize their *redistributive* local tax burden. This section explores the importance of access, amenities, and local public services in explaining the decentralization of the urban population.

ACCESSIBILITY AND INCOME

Cities have grown up around industry. When deciding where to live within a metropolitan area, most people consider accessibility to place of work as the dominant factor. Commuting trips constitute nearly 44 percent of all household trips, while shopping trips are only 12 percent, and social-recreational trips are 21 percent (Kain, 1962). Housing that is accessible to places of employment commands a premium in the housing market.

Access to place of work and income are treated together for two reasons. First, income influences household location choice through its influence on the cost of transportation; the cost of travel time is an important component of accessibility. Second, the economic model that links place of work and place of residence emphasizes the role of property values, which allocate households according to their willingness and ability to pay as determined by taste and income. The empirical studies discussed here describe how changes in employment location, transportation costs, and income influence residential location.

The simplest models for explaining urban population distribution are based upon the assumptions that the level of urban employment is fixed and is carried out at the city center, and that the population is also fixed and is allocated throughout the metropolitan area through the operation of the housing market. Location decisions are therefore reflected in land prices and residential density. More sophisticated models allow for the simultaneous location of jobs and households and for multiple employment centers. Empirical estimates about the relationship between workplace and residential location, the effects of transportation cost changes, and household income changes are summarized below, following the outline of the underlying models.

Accessibility may be defined in terms of three factors: distance, because out-of pocket travel expenses increase with the length of the journey; travel time, because time spent commuting could be spent either working or on leisure activities; and the mode of transportation, because households appear to weigh the cost of travel by any mode other than automobile quite heavily.

Although most theoretical models emphasize the response of households to the predetermined location of firms, firms themselves respond to the location of people. In addition, transportation policies that affect households also affect businesses. For example, the construction of a freeway that permits easy access to the central business district for commuters allows businesses that serve the CBD to locate further away from the city center. However, if commuters jam the roadways, then businesses find that their deliveries are delayed and will try to locate more closely to their customers. The complexity of the relationships between access and residential location does not necessarily invalidate the use of the model outlined below to analyze urban residential location, because households are much more mobile than firms, but it will not reflect all the factors.

The basic economic model of location shows how residential land prices decline with the distance from employment. The model constitutes the basis for much of the research on patterns of metropolitan residential location.

Theory of Accessibility and Location in an Urban Area[1]

Households living in an urban area are assumed to choose their location to pay as little as possible for commuting costs and land rents. The model makes a number of simplifying assumptions including a fixed number of households in a given metropolitan area, a fixed number of wage earners per household, and that all wage earners are employed in the CBD. Further, it is assumed that households are unconstrained in their ability to choose freely among alternative locations, that they are perfectly informed, and that moving is costless. The supply of housing, produced by competitive firms, adjusts instantly to changes in demand, or to changes in the relative costs of land and nonland (materials) inputs.

On the demand side, households compete in securing housing services (shelter and other conveniences) through a process of competitive bidding.[2] These services are viewed as an output of the housing structure and its location.[3] Location deci-

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[1] The derivation of an urban land rent model owes much to the early work of Haig (1927) and Ratcliff (1949). It was clearly formulated by Wingo (1961), Alonso (1964), and Strotz (1965). Recent work by Mills (1967 and 1972), Muth (1969), Ingram et al. (1972), and Solow (1972 and 1973) have refined some of its aspects.

Land rent models abstract from the multitude of complex factors that affect urban forms and emphasize only a few aspects. Some of the more important refinements of the simple model are discussed below. This exposition is based upon that by Muth (1969).

[2] A unit of housing services is not the same as a house or self-contained residence. A given house may contain any number of units depending upon its size and quality. The concept is introduced to account for structures of varying size and quality.

[3] Mathematically, the model may be expressed as follows: Each household in the metropolitan area consumes the mix of housing services (H) and other goods (X) that maximizes satisfaction or "utility" (U) subject to the constraints imposed by the level of disposable income. All households exhibit identical income and tastes. Total expenditures on housing—the price of a unit of housing services, P(k), which varies with distance, k, from the CBD, multiplied by the number of units housing services (P(k)H) and expenditures on all other goods, $P_x \times X$, and on commuting, cannot exceed Y. P(k) is the price of one unit of housing services at a distance k from the CBD. The prices of all other goods are assumed not to vary within the metropolitan area. Commuting costs for a household are the sum of both out-of-pocket commuting expenditures and the value of time spent by household members in commuting; these costs are a function of the commuting distance, k, and because the value placed on lost time is related to income, household income as well, T(k,Y). This may be written as:

$$(1)\ \text{Max } U = U\,(H,X);\ \text{subject to}$$

$$(2)\ P(k) \times H + P_x \times X + T(k, Y) = Y.$$

The two equilibrium conditions can be derived from Eqs. (1) and (2) and written as:

$$(3)\ U_x/P_x = U_H/P(_k).$$

sions satisfy two conditions: (1) The household allocates its income between housing and all other goods so that the marginal utility of consuming an additional dollar's worth of housing services is just equal to the marginal utility of consuming an additional dollar's worth of other goods; and (2) the household chooses a residential location such that it cannot reduce its expenditures on housing and commuting by moving closer to or further away from the central business district. Households have to trade off decreasing housing costs against increasing commuting costs in deciding how far from the center to live.

Equilibrium within the metropolitan area occurs when the sum of the costs of housing and commuting is equal at all points in the metropolitan area. If we relax the assumptions that all households have identical income and tastes, then households locate where their total costs of housing services and commuting are minimized.

The simplest model was refined by Alonso (1964, p. 8–9), who pointed out that households are not simply choosing their location but also the size of the site on which their home stands:

> If the only criteria for residential location are accessibility to the center and the minimizing of the costs of friction, and if the size of the site is excluded, all residences would be clustered around the center of the city at a very high density.

By allowing variations in size of site, Alonso relates differences in land values to differences in residential density. Where land is expensive, density will be high; therefore, households demanding a lot of space will locate in areas where land is inexpensive.

Theoretical Implications for Residential Location[4]

Because housing costs decline and commuting costs increase the further the household resides from the population area, households face a tradeoff in deciding how far out to live. Those wishing to consume more housing services (including those with high incomes, children, or a preference for space) will, all other things being equal, reside where housing is cheaper, further away from the CBD. Households with more workers, and thus higher commuting costs, will reside closer to the center. As housing service costs decline outward from the city center, so will residential densities. At the city center, where land is expensive, the producers of housing services will tend to use less land and more of the other inputs in constructing living units.

The model yields some predictions concerning the effects of changes in income and transportation costs:

1. An increase in a household's income affects a tradeoff between housing and commuting costs in two conflicting ways. On one hand, it increases the demand of the household for housing and thus encourages a move further

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where U_x and U_H are the first derivatives of Eq. (1) with respect to X and H and are both positive. And

$$P_k = -1/H \times T(k),$$

where P_k is the first derivative of P(k) with respect to k.

[4] This discussion is based upon unpublished research by A. Gomez-Ibañez.

out from the center, where a unit of housing services costs less. On the other hand, an increase in income will raise the time costs of commuting a given distance and thus encourages the households to move closer to the metropolitan center.[5]

2. A reduction in transportation costs will encourage consumption of more housing by increasing household real income and will lead to location further from the city center. Moreover, if the reduction in costs lowers the marginal cost of commuting an additional mile at the edge of the city,[6] households will have further incentive to move out, because by so doing they can reduce the total cost of housing. This will in turn lower land prices and residential density near the metropolitan center and in the metropolitan area as a whole and increase urban sprawl.[7]

Refinements of the Basic Model

Many of the basic assumptions of this residential location model, in addition to the fixed workplace location and fixed number of workers, are obviously unrealistic. First, the model assumes that each unit of housing services is identical except for its location. However, in the real world, housing varies, because of both structural differences and variations in the attractiveness of the surrounding neighborhood. Second, the assumption that the housing stock is instantaneously responsive to shifts in demand is belied by the fact that housing is extremely durable, often lasting 50 years or more. Finally, the assumption that all workers are employed in the center of the metropolitan areas is unrealistic because employment is growing rapidly in suburban areas.[8]

If these assumptions are relaxed, the model's predictions are more complex. Changes in commuting costs will take years to be reflected in housing patterns because few major structural changes can be easily accommodated with the existing stock.[9] Neighborhood characteristics may prove the most resistant to change. For example, despite sharply increasing commuting costs, white suburban households may be very slow to return to central city neighborhoods unless convinced that many of their peers will do the same.[10]

The model can be expanded to include several additional factors that influence residential location decisions, including taxes and local public services (especially schools) and policies such as exclusionary zoning and racial preferences. Measures of these variables may be included in the definition of housing services (H in the simple model). Property values are then a function not only of distance to the CBD but also of structural and neighborhood variables. Many of the studies discussed

[5] If the increase in income is from unearned income—rents, dividends, or transfer payments—then the effect will be unambiguous; households will tend to move away from the city center because their commuting costs have not changed.

[6] As opposed to lowering commuting costs by the same amount for all workers, no matter how far they travel.

[7] Not all residential location models predict the changes in the price of land that result from changes in transportation. Models including those are by Getz (1975) and Strotz (1965).

[8] Researchers at the National Bureau of Economic Research have constructed a residential location model that relaxes some of these unrealistic assumptions. See Ingram et al. (1972).

[9] However, the level of maintenance in existing stock may alter as a response to changes in demand.

[10] The difficulties of changing neighborhood characteristics are explained in detail by Schelling (1971 and 1972).

below have included both structural variables and neighborhood characteristics to explain differences in property values.

There are several theoretical and empirical problems in estimating how these factors influence property prices. Many factors enter into residential location decisions and many are difficult to quantify. When only a few variables are included, the estimated relationships may be biased by the influence of omitted variables. Few property value studies have been based upon detailed data bases, and those that have are beset with measurement problems.

Simultaneous Determination of Employment and Residence. Steinnes and Fisher (1974) and Steinnes (1977) have used models that allow for the simultaneous determination of place of work and residential location within an urban area. They observed that households select where to live based on the location of firms, but that firms also choose where to locate based upon the location of households. The results obtained from the simultaneous model are significantly different from those of the simple location models. Steinnes has extended the cross-sectional model to encompass dynamic changes over time.

Multiple Workplace Models. Alternative models have been developed in which workers are employed in many different centers within a metropolitan area. These employment centers compete with one another for customers, although not with other metropolitan areas (Solow, 1973; White, 1974). Changes in commuting costs to a particular production center affect its comparative advantage and thus the level of employment and population at that location in two ways: First, reduced commuting costs increase the real incomes of the workers employed in the production areas. Employers can therefore reduce wages, improving their position relative to competitors in other production areas, leading to an expansion of employment. An increase in commuting costs would reduce their competitive position. Second, reduced commuting costs lead to reduced land prices, which lower the cost of acquiring additional land for expanded production. A decrease in the cost of transportation services to and from an area will increase the level of employment in that area, and an increase in commuting costs will reduce employment.

Empirical Evidence

Studies using these basic models emphasize three factors that explain the process of urban residential decentralization: transportation improvements, rising incomes, and the decentralization of employment. Five general conclusions emerge. First, the concentration of jobs in the CBD has been a major force in the formation of the city. Land within easy access of the city center has commanded a premium.[11] Second, this simple configuration is slowly giving way to a "plurality of centers, often no longer compact or sharply delineated, largely held together by the amazing unfixed point-to-point capabilities of the auto" (Foley, 1975, p. 157). Third, non-access factors such as amenities have risen in importance to households selecting a home. Fourth, the importance of accessibility differs among households according

[11] A number of studies have confirmed a declining gradient of land values from the city center (Brigham, 1965; Muth 1969). Others have found that distance to the CBD is not a significant factor, and there is some evidence that the importance of living close to the center of the city may be declining. Grether and Mieszkowski (1974), in a study of property values in New Haven, found that distance to city center was generally not significant. The distance effect was not significant in the work of Kain and Quigley (1970a and b) and Wendt and Goldner (1966).

to family size, income, and other characteristics. Finally, the net effect of rising incomes has been to encourage suburbanization. The desire for more space has outweighed the increase in the time cost of commuting for most households and has encouraged decentralization. Decentralization has been accompanied by a flattening of the rent gradient and a reduction in central city densities.

Transportation. The most important factor in the suburbanization of population has been the automobile. Muth (1969) estimated that the increase in car registrations during the 1950s, from 0.26 per capita in 1950 to 0.34 in 1960, led to a 14 percent reduction in central city population and a 47 percent increase in urban land area.[12] Rising incomes and population growth led to a net increase in central city population, however. Automobile registration continued to grow in the 1960s, reaching 0.44 per capita in 1970. The relationship is not one way—suburbanization may also have encouraged automobile ownership. Older SMSAs are structurally less able to adapt to the growth of the automobile and rely more heavily on public transportation. Only 35 percent of households rely exclusively on their automobiles in older SMSAs, compared with 65 percent in new SMSAs (Table 18). Muth found some evidence to confirm that accessibility to the CBD is more valuable in older SMSAs but not to a significant extent. Traffic congestion is one of the undesirable outcomes of high densities. Average time spent on daily work trips increases with city size. In 1966, it was estimated that center city workers in the 12 largest SMSAs spent 53 minutes each day commuting but only 35 minutes in smaller SMSAs (Morgan et al., 1966). Cities with the highest densities have generally lost population most rapidly.

Household Income. There is some disagreement concerning the importance of income in choosing location. An extensive study of residence location and workplace location in six concentric rings in the Detroit metropolitan area found that the choice of place of residence was influenced by income and family size as well as by place of work (Kain, 1968). The commuting pattern was largely from residents in outer rings to work places in inner rings. The average length of the commuting trip decreased as the distance of the workplace from the CBD increased. Workers employed in high income occupations tended to live in outer rings regardless of place of work. Lower income workers always tend to live near their workplace regardless of its location. The smallest and largest families tended to make the shortest journey to work. Kain hypothesized that this was because the small space demands of small families allowed them to locate in the center ring. Kain also found that commuting patterns for nonwhites differed from those for whites, a fact he attributed to racial segregation in the housing market. The longest trips by nonwhites in Detroit were made by those employed in the outer ring and the shortest by those employed in the inner rings. The rapid increase in the rate of labor force participation of women, from 29 percent in 1950 to 43 percent in 1970, may explain population shifts. Childless households with both members working tend to locate in the CBD.

Ellickson (1977) found that higher income households tend to prefer locations near the center of the city, reflecting the higher value they attach to commuting time and other central city amenities, contrary to Kain's findings for Detroit. These differences may be attributable to the differences in the metropolitan areas exam-

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[12] The gross influence of car registration in reducing central city population was more than offset by the influence of net metropolitan population growth.

Table 18

METROPOLITAN U.S. AUTO/HOUSEHOLD RATIO AND PERCENTAGE DISTRIBUTION OF REGULAR TRIPS BY TYPE OF METROPOLITAN ENVIRONS, 1965

	Total U.S. Metropolitan[a]	Old, Large Central Cities[b]	New, Large Central Cities[b]	Small Central Cities	Suburban Areas
Family Income					
Total, all income	1.23	0.54	1.06	1.12	1.43
Under $4,000	0.64	0.15	0.58	0.55	1.04
$4,000-7,499	1.21	0.62	0.86	1.14	1.35
$7,500 and over	1.55	1.05	1.43	1.56	1.60
Mode of Travel					
Total trips, all modes	100	100	100	100	100
Walk or taxi	5	8	2	5	6
Always common carrier	8	37	15	7	4
Sometimes auto, sometimes common carrier	7	20	18	10	3
Always auto	80	35	65	78	87

SOURCE: Donald L. Foley, "Accessibility for Residents in the Metropolitan Environment," in Amos H. Hawley and Vincent P. Rock (eds.), *Metropolitan America in Contemporary Perspective*, Sage Publications Inc., Beverly Hills, California, 1975, pp. 171, 172.

[a] The New York area is excluded.

[b] The 11 largest SMSAs (excluding the New York area) were divided as follows: "old" central cities were Baltimore, Boston, Chicago, St. Louis, and Philadelphia; "new" central cities were Cleveland, Detroit, Los Angeles, Pittsburgh, San Francisco, and Washington, D.C.

ined and perhaps also to the differences in the time periods of the studies. Lower income households place less value on proximity to the CBD. However, housing on large lots with more rooms can be obtained at fairly low cost in suburban areas and are strongly desired by higher income households. Ellickson found that commuting costs outweighed other considerations. There was no difference between black and white households in their response to commuting costs when income was held constant. As expected, space considerations were much more important for households with children than for those without.

The relationship between income and location is probably more complicated than that portrayed in these conflicting studies. As a household's income increases from $10,000 to $15,000 a year, it may show a tendency to move to the suburbs—the income elasticity of demand for space outweighs commuting costs. However, an increase in income from $20,000 to $30,000 may be associated with a tendency to move toward a central site, all other things being equal, especially if there are two income earners.

The nature of the jobs of both earners may be significant. Two households, both with an annual income of $30,000, may behave very differently if in one both earners are highly skilled, earning $15,000 each, and in the other household one earner receives $23,000 and the second $7,000. In the latter case, the second wage earner may be performing the type of job that is available throughout the metropolitan area, but in the former case, both are working in the CBD. In view of the recent rapid growth of two-income households, much more research is needed to assess their effects on residential location patterns.

As income rises, the time component of commuting necessarily increases. A number of studies have attempted to measure the cost of travel time.[13] Their results indicate that travel time is valued between one-quarter and one-half of the wage rate (Table 19). The property value studies yield results compatible with other studies. Unfortunately the evidence relating the change in the value of travel time with changes in income—important for assessing the effect on residential location of secular increases in income—is ambiguous. Some have found that the fraction tends to increase with income and also with the length of the trip (Beesley, 1970; Gronau, 1970). Stopher (1969) found slight evidence of a decline in travel costs as a proportion of wages as income increases.

Employment Decentralization. The role of the decentralization of employment in encouraging residential suburbanization has also been the subject of a number of studies. Firms face an incentive to relocate in suburban areas because they will be able to offer their workforce lower wages reflecting lower commuting cost, although some of the reduced transportation costs will be reflected in the increased land values. Firms face a number of other incentives for decentralizing (summarized in *Economic Development*, Sec. IV): easy freeway access in suburban locations compared with inadequate facilities and congestion downtown; increased use of single-story, land intensive plants; reduced reliance on rail linkages; and central city land prices bid up by commercial users that have displaced manufacturing. The decentralization of employment is unlikely to lead to a uniform spreading of jobs throughout the urban area. Rather, the existence of transportation nodes, zoning ordinances, and economies of agglomeration will lead to the development of a number of employment centers. Lave (1970, p. 149) has shown in a simple model that "if a city could be divided so that there are two city centers, transportation expenditures would fall by 30 percent. Dividing a city into four city centers would lead to a 50 percent reduction in transportation expenditures."

The extent to which the decentralization of population has led to or resulted from the decentralization of employment has been a hotly debated topic. Kain (1962) argued that population was responding to the wartime growth of employment in suburban areas, even though he presented data that employment was shifting toward the suburbs faster than population during the 1950s. Mills (1970) argued the reverse. However, using a cross-sectional simultaneous model, Steinnes and Fisher (1974) found that the location of employment does not have a significant influence on residential location; they hypothesize that residential location influences employment location more strongly. They also found that there were significant differences among different race and skill categories. For example, manufacturing jobs in an area attracted white households (stronger for blue than for white

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[13] See the summaries of these studies presented in Nelson (1975, Ch. 5) and Cesario (1976). The conceptual approach to the use of property value differentials to estimate the value of time assumes that the reduction in property values associated with an increase in distance capitalizes the total cost of the longer commuting trip. If the out-of-pocket expenses are subtracted from total costs, the remainder is the cost of time. Using this approach, Mohring and Harwitz (1962), Muth (1969), and Pendleton (1963) estimated the time cost of commuting travel.

Studies of this form assume that the demand for and number of trips to the CBD are perfectly inelastic with respect to changes in the cost per trip (Nelson, 1973) and that all employment is located in the CBD. Also, as argued above, not all the differences in commuting costs among locations may be reflected in differences in land values, some may be reflected in wage differentials. It is difficult to control for all the other factors that affect property. If amenities that vary with distance to the CBD (such as air quality and accessibility to open space) are omitted from the equation, then estimates will be inaccurate.

Table 19

SUMMARY OF VALUE OF TIME STUDIES

Source	Year of Estimate and City	Estimated Value of Time (per hour/person)	Average Wage (private, nonagricultural industries)	Value of Time (in 1970 dollars per hour/person)
AASHO (1960)	–	$0.86	$2.09 (1960)	$1.32
Mohring and Harwitz (1962)	1960 Seattle	0.75	2.09 (1960)	1.16
Pendleton (1963)	1960 Washington, D.C.	0.75	2.09 (1960)	1.16
Muth (1969)	1969 Chicago	0.79	2.09 (1960)	1.22
Claffey (1961)[a]	1959 inter-urban	0.95	2.02 (1959)	1.51
Thomas (1968)[a]	1968 inter-urban	1.21	2.85 (1968)	1.37
Beesley (1970)	1963 London	33-50 percent of wage rate		–
Quarmby (1970)	1965 Leeds	20-25 percent of wage rate		–
Lee and Dalvi (1969)	1969 Manchester	25-30 percent of wage rate		–
Lisco (1968)	1967 Chicago	40-50 percent of wage rate		–
Stopher (1969)	1968 U.K.	20-25 percent of wage rate		–

SOURCE: Jon P. Nelson, *The Effects of Mobile-Source Air and Noise Pollution on Residential Property Values*, Institute for Research on Human Resources, Pennsylvania State University, University Park, Pennsylvania, p. 5-5.

[a] Computed by assuming 1.5 passengers per vehicle. Claffey obtained $1.42 per vehicle-hour; and Thomas, $1.82.

collar workers) but had a negative effect on the residential decisions of black households. A number of variables measuring the availability of amenities—including air and school quality—were more attractive to white than black households, probably a result of high income white households outbidding low income black households for attractive sites. Although these results are only tentative, they do indicate the value of a simultaneous equation model and of disaggregating the residential sample according to social and economic characteristics.

Steinnes (1977) used pooled cross-sectional and time-series data for 15 cities and found that, for both manufacturing and service jobs, employment followed population to the suburbs rather than the reverse. In fact, people tended to *move away* from manufacturing jobs, presumably because of pollution or other disamenities. He concluded (p. 74), "The efforts of central cities to attract and retain manufacturing may be accelerating, not retarding the flight of residents from the city."

AMENITIES

As the automobile has reduced the importance of proximity to place of work in residential location decisions, there has been growing interest in how amenities —quiet, clean air, recreational open space, public safety, and cultural and social diversity—influence where households choose to live.

Theory of Amenities and Residential Location

Most of the research on the influence of the quality of the residential environment on location has not examined how amenities affect settlement patterns directly but have analyzed the relationship between various measures of amenities and property values. Typically, this has been done by extending the theoretical model outlined above so that a unit of housing services (H) includes the quality of the neighborhood. In simple terms, housing prices are regressed against a number of variables that include the structural attributes of the dwelling unit and a number of variables that attempt to measure the level of amenities.

Changes in property values clearly reflect changing residential location preferences. A hypothetical example illustrates this. Annual expenditures on housing services are probably about 10–15 percent of housing values (CBO, 1977a), including mortgage interest and amortization (or forgone interest on equity if the house is fully owned), property taxes, insurance, and maintenance repairs. The average urban household probably spends between $2000 and $2500 a year on housing services if it is renting, and between $3000 and $4000 a year if it owns its own home (CBO, 1977a). If the property values are driven down by $4000 or $5000 because of the presence of factors that adversely affect demand, such as noise from a new highway or smoke from a new power plant, then annual expenditures will decline by $400 or $500, or about one-fifth of the average level of housing expenditure. The decline in property price will tend to be associated with a change in ownership. High income households generally can, and will, pay more for an amenity than a low income household. Therefore to continue to live in a polluted area, a high income household may require, perhaps, $5000 compensation, a low income household only $3000. The result will be that the property is sold to a lower income household at a $3000 discount, and the original occupants move to a cleaner location. If the income elasticity demand for housing is one, then the average income in the neighborhood might also fall by 20 to 25 percent, a decline sufficient to change the neighborhood dramatically, perhaps precipitating residential abandonment and urban decay. Clearly, property values measure an important aspect of the residential location decision.

The correspondence between property values and average household income is not as simple as this example makes it appear. Income is not the only characteristic of households that will change as the level of amenities changes. Building a park will attract not only high income households to a neighborhood but also households with children. Some households may even regard the park as a disamenity because the noise and litter outweigh any recreational advantages. However, there has been little research on the relationship between local household characteristics and property values that would allow these relationships to be understood in more detail. The work of Mayo (1971 and 1973) and Ellickson (1977) are among the few rigorous examples. These studies estimate the probability that a house with given characteristics and enjoying certain neighborhood amenities will be occupied by a household of a certain type, defined by race, family size, and income.

There are many difficulties in measuring the quality of the residential environment. There are many possible components. As well as the list covered in this subsection, less tangible atributes such as the ambiance of a neighborhood, the convenience and quality of local retail stores, visual attractiveness, and existence of neighborhood organizations may shape attitudes. Even among those amenities discussed, there are often many measurement problems.

Empirical Evidence

Some general conclusions emerge from this section: First, amenities do influence property prices. Second, rising real income has led to a growing emphasis upon acquiring an attractive environment rather than simply securing shelter. The value of residential property is strongly related to the income of the occupants and the level of investment in the structure and its immediate environment. Third, in most SMSAs, suburbs offer higher levels of these amenities than central cities: Air pollution is less, more recreational open space is available, noise levels are lower, and crime rates are lower. This has undoubtedly encouraged suburbanization.

Some indications of the frequency with which neighborhood disamenities affect households can be gained from the Annual Housing Survey conducted by the U.S. Bureau of the Census, summarized in Table 20. More than three-quarters of all households, both owner occupiers and renters, are bothered by at least one undesirable neighborhood characteristic. Noise is the most frequently mentioned and is a cause of concern to more than half of all households in metropolitan areas. In fact, if the nuisance attached to heavy traffic is noise related, then the importance of noise is even greater. In general, for both renters and owner occupiers, a central city location suffers from higher noise levels, heavier traffic, more crime and litter, more abandoned and deteriorating housing, more odors, and less adequate schools than a suburban location. A nonmetropolitan location is associated with a higher incidence of poorly lit and ill-repaired streets, inadequate public transportation, and poor shopping facilities. In central city locations, renters are more concerned with most disamenities than are owner occupiers. Perhaps most surprising are the small numbers of households in central cities bothered by inadequate schooling and

Table 20

PERCENT OF HOUSEHOLDS AFFECTED BY UNDESIRABLE NEIGHBORHOOD CHARACTERISTICS, INSIDE AND OUTSIDE CENTRAL CITY, 1974

	Owner Occupied Units			Renter Occupied Units		
	Inside SMSAs			Inside SMSAs		
Characteristic	Total	In Central Cities	Outside SMSAs	Total	In Central Cities	Outside SMSAs
Total Occupied Units[a] (thousands)	29,708	11,199	16,076	18,966	11,367	6,080
At least one undesirable characteristic[b]	78.4	78.9	77.7	79.1	79.5	77.3
Noise	51.7	54.4	42.4	52.4	52.0	45.4
Heavy traffic	28.7	32.0	29.7	36.3	38.1	33.3
Streets needing repair	17.9	17.5	26.9	15.0	15.2	20.2
Roads impassable	11.0	11.0	12.8	8.9	8.9	10.8
Inadequate street lighting	22.3	14.7	26.8	14.2	11.7	21.1
Crime	18.8	23.8	8.4	24.2	29.6	9.6
Litter	13.8	17.0	14.3	16.7	20.3	12.3
Abandoned buildings	5.6	7.8	6.1	9.0	11.8	7.8
Deteriorating housing	9.6	12.3	8.2	12.5	15.3	10.1
Odors	10.5	11.6	9.4	10.9	11.6	9.1
Inadequate public transportation	37.7	19.8	54.8	19.8	11.1	49.1
Inadequate schools	4.3	5.1	4.4	3.9	4.5	3.6
Inadequate shopping	12.4	11.0	18.7	10.5	10.9	13.7

SOURCE: U.S. Bureau of the Census, *Current Housing Reports*, Series H-150-74B, Annual Housing Survey: 1974, Indicators of Housing and Neighborhood Quality, U.S. Department of Commerce, Washington, D.C., 1975.

[a] Includes respondents who did not report conditions.

[b] Figures will not add to total because of units reporting more than one undesirable characteristic.

crime. Of course, the data do not measure the degree of concern, only its frequency among households.

Quiet. The growing concentration of a large proportion of the population in urban areas has increased the nuisance caused by noise. Urban expressways, airports, mechanized garbage collection, air conditioning units, and radios are sources of noise that are all too familiar to the urban dweller. The problem of noise is particularly acute in older, densely populated cities, where the narrow streets echo the noise of passing automobiles and commercial activity. Newer cities, with lower residential densities and wider throughfares, suffer less in this regard. Suburban areas rarely experience noise levels as high as those in the city (Table 21).[14]

Table 21

DAYTIME RESIDUAL NEIGHBORHOOD NOISE LEVEL (L_{50})[a] BY TYPE OF LOCATION, IN dBA

Type of Location	Typical Range	Median
Quiet suburban residential	41-45	43
Normal suburban residential	46-50	48
Urban residential	51-55	53
Noisy urban residential	56-60	58
Very noisy urban residential	61-65	63

SOURCE: U.S. Environmental Protection Agency, *Community Noise*, Washington, D.C., December 31, 1971, pp. 28 and 48.

[a] L_{50} is the noise level exceeded 50 percent of the time.

A number of studies have examined the relationship between property values and the proximity to freeways, using the latter as a measure of noise.[15] A study in Chicago detected a significant relationship between measured noise levels and property values (Vaughan and Huckins, 1975). There was no discernible influence on property values associated with noise levels below 50 dBA. However, approximately 75 percent of the sampled property experienced noise levels above this threshold. The decline in property values resulting from noise were found to depend upon both the level of the noise and the value of the property. The average home in the city sold for about $500 less (about 2.5 percent of average value) than if it had been situated in an average, quiet, suburban location.

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[14] Instruments allow the measurement of sound amplitude (in decibels) and sound frequencies (in cycles per second) but these do not directly measure nuisance value. The sound of traffic may be more irritating than the sound of waves breaking on the beach even when both are at the same amplitude and frequency. In addition, neighborhood noise fluctuates considerably over time. A simple measure of the background noise levels would not reflect the irritation caused by vehicles, trains, or aircraft. The nuisance value of noise varies with time of day. The roar of a truck may pass unnoticed at midday but create considerable disturbance at midnight. Finally, it is very difficult to measure the effect of noise on households. Psychological and physical harm are not detectable in subjects exposed to noise levels below 70 dBA (U.S. Environmental Protection Agency, 1972). Yet community noise levels in even the noisiest urban residential neighborhood rarely cross this threshold for more than a small fraction of the time.

[15] In a study of apartment rents in Portland, Oregon, a slight negative influence attributable to high noise levels was detected (Towne, 1966). The influence was not consistent or statistically significant. Colony (1967) concluded that noise reduced the values of property contiguous to the Detroit-Toledo Expressway between 20 and 30 percent. Only property within 50 ft of the freeway was affected. In a more detailed study, Gamble et al. (1974) found that property abutting the Washington Beltway was depressed by an average of $1518. More recently, Langley (1976) found that property abutting the Beltway sold for $1650 less than property situated more than 1000 feet away. He also found that the value of abutting property increased more slowly over time than the values of more distant property—a 26 percent increase over a ten-year period for the former compared with a 31 percent increase for the latter. Nelson (1975) found a significant relationship between property values and estimated noise levels in suburban areas.

In addition to the high average noise levels in cities, a few households suffer from very high noise levels. Expressways are a major cause. In the city of Chicago, it was estimated that there were 5500 owner occupied dwellings (with an average monthly rental of $105) exposed to expressway noise, a total of nearly 2 percent of all homes in the city. The noise damage experienced by those homes, in terms of reduced property values, was estimated to be nearly $3000 each. Estimates of the effects of traffic noise on property values from a number of studies are summarized in Table 22.

Aircraft noise is a concern of growing importance to urban areas. The expansion of suburban areas has placed many homeowners close to major airports, and the increase in air travel, from 10 billion passenger miles in 1950 to 120 billion in 1970, has multiplied the problem. Lawsuits over landing rights for the supersonic Concorde have focused public attention on the issue. Courts have issued injunctions restricting aircraft overflights of residential areas and have forced airlines to alter flight patterns. Property values are adversely affected by aircraft noise (Table 23). The differences in the estimates in this table arise from differences in the functional form of the estimating equations used and in the value of property. There is some agreement with respect to damages. Nelson's findings indicate that property located near an airport (with a noise equivalent frequency, NEF, of 40) would sell for about 10 percent less than similar property more fortunately situated (NEF 20). He estimated that there were 20 census tracts in the Washington, D.C. SMSA with a combined population of 43,931 (1.4 percent of the metropolitan population) whose noise index was above 20 NEF because of aircraft using National Airport. For the nation as a whole, the corresponding numbers are 6.1 million people exposed to airport noise levels between 30 and 40 NEF and 0.6 million to levels in excess of 40 NEF (Nelson, 1975, pp. 10–18).

Table 22

SUMMARY OF STUDIES RELATING TRAFFIC NOISE TO PROPERTY VALUES

Study	Study Area	Effect	
Vaughan and Huckins (1975)	Chicago	-$2777 to a $20,000 home at 70 dBA	
		-133 per dBA at mean	
Gamble et al. (1974)	Bogota, N.J.	-646 per dBA	-$82 per dBA average
	N. Springfield, Va.	-69 per dBA	
	Rosedale, Md.	-60 per dBA	
	Towson, Md.	-141 per dBA	
		-1518 next to expressway	
Langley (1976)	Washington, D.C., suburbs	-1650 next to expressway	
Nelson (1975)	Washington, D.C., suburbs	-58 per dBA at mean	

Table 23

SUMMARY OF STUDIES RELATING AIRCRAFT NOISE POLLUTION TO PROPERTY VALUES

Study	Functional Form for Noise Damage Estimating Equation	Study Area	Best Marginal Damage Estimate per Unit	Range of Noise Values in Sample	Percent Reduction in Average Property Value per Unit NEF
Emerson (1969)[a]	Log	Minneapolis	-$105/NEF	100-125 CNR	0.4
Paik (1972)[b]	Log	New York, L.A., Dallas	-$455/NEF	20—40 NEF[g]	1.6
Dygert (1973)[c]	Semi-Log	San Francisco, San Jose	-$140/NEF	25—45 NEF[g]	0.5
Price (1974)[d]	Linear	Boston	-$100/NEF	25—45 NEF[g]	0.4
Nelson (1975)[e]	Linear	Washington, D.C.	-$130	25—35 NEF[g]	0.5
Gautrin (1975)[f]	Linear	London, England	-$433	not applicable	5.0

Source: Jon P. Nelson, *The Effects of Mobile-Source of Air and Noise Pollution on Residential Property Values*, Institute for Research on Human Resources, Pennsylvania State University, University Park, 1975. Nelson's own estimates have been added.

[a] For Community Noise Ratio (CNR) 110-115, Emerson estimates damages at $42/CNR for a $20,000 home in 1967. Expanding this figure by a factor of 1.50 to convert to NEF yields $63/NEF. This damage was then expanded by 1.40 for a $28,000 home and by 1.20 to convert to 1970 dollars. See Nelson (1975).

[b] Paik estimates the mean elasticity for all three airports combined to be -0.65. For NEF 40, a unit change amounts to 2.50 percent or about a 1.62 percentage reduction in property value. For a $28,000 home, this amounts to $454/NEF. See Paik (1972, p. 143).

[c] Estimated for a 0.5 percent reduction in property value for a $28,000 home. See Dygert (1973, p. 128) for alternative estimates based on variable elasticity of noise.

[d] For NEF 25 to 35, Price estimates a reduction in rents (1960 to 1970) of $100 per unit of $10/NEF on an annualized basis. Dividing by an interest rate of 10 percent yields capitalized damages of $100/NEF. See Price (1974, p. 59).

[e] Damage estimates based on $28,000 home. See Nelson (1975).

[f] Damage estimates based on £5,000 home and exchange rate of $1.70 to £ 1. Gautrin only attempted to assess effect through a comparison of prices in affected areas with prices in unaffected areas. The 5 percent reduction represents the difference in the value between these two areas.

[g] The NEF measures noise levels in tone corrected noise energy levels. The noise levels of aircraft overflights are recorded, and their frequency during day and nighttime periods (12 dBA are added for night overflights). A composite index is calculated based on logarithms (see U.S. EPA, May 1971, p. 52). The resulting values of the NEF may be characterized by the likely community reaction. Although noise may be disturbing, no complaints are expected at values less than 30. Between NEF values of 30 and 40, vigorous repeated complaints will be received and group actions may be expected.

Air Quality. Together with noise, foul air has long been a lamented characteristic of large cities. Chaucer complained of the smell as he approached London over 500 years ago.[16] The industrial revolution added factory smoke to the smoke from residential hearths. In spite of strident protests of Londoners during the nineteenth century, it was not until more than 2000 people died during a severe smog episode in December 1952 that the problem was tackled through strict measures. Although the zenith of smoke pollution has passed, other forms of air pollution, including nitrous oxides and hydrocarbons, have become more serious. Typically, a location in the suburbs offers some respite from the odors and particulates that characterize the air of the central city.

Air quality is affected by city size and density, as well as air currents and geographic configuration.[17] An SMSA with a population of 10 million will tend to have 1.6 times the concentration of sulfur dioxides of an area with only 100,000 inhabitants (Table 24).

Table 24

AIR POLLUTION CONCENTRATIONS BY SMSA SIZE

SMSA Population (thousands)	Particulates	Sulfur Dioxide	Nitrogen Dioxide
100	1.0	1.0	1.0
2,000	1.4	2.3	1.3
10,000	1.6	3.2	1.5

SOURCE: Irving Hoch, "Income and City Size," *Urban Studies*, Vol. 9, No. 3, October 1972, p. 318.

There are also noticeable differences between pollution levels in the central city and levels in the suburbs. Particulate levels in central cities tend to be 1.5 times the levels in the suburbs; for lead and carbon monoxide the ratio may be as much as 10:1 (Hoch, 1972, p. 318). However, state and federal air quality control measures on the one hand and the dispersion of industry on the other have narrowed the gap. In 1957, the concentration of total suspended particulates in central cities was six times the level in nonurban areas. By 1972, they were barely double (*Environmental Quality*). Dispersion of employment and population leads to a greater per capita output of pollution in a metropolitan area but lower concentrations in the city center (Robson, 1977).

Air pollution depresses property values and impairs health and soils materials.[18] Many studies have identified a negative relationship between the level of air pollution and the value of property (Table 25), which indicates that purchasers of homes do take into account the air quality of the neighborhood when buying a house and that they demand substantial compensation in terms of lower property prices for high levels of pollution.

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[16] During particularly bad days, drastic air pollution measures were taken. A man was hanged for burning coal in the city (Revelle, 1968).

[17] The worst fatal air pollution episode in the United States ocurred in 1948 in Donora, Pennsylvania, a town of less than 50,000 inhabitants.

[18] Original research was performed by Nourse (1967), Ridker (1967), and Ridker and Henning (1967). There have been a number of studies since then. See Anderson and Crocker (1971); Barrett and Waddell (1973); Cohen, Fishelson, and Gardner (1974); Jaksch (1970); Peckham (1969); Spore (1972); Steele (1972); Waddell (1974); Weiand (1970); and Zerbe (1969). A summary of these results is provided in the National Academy of Sciences (1973), and Nelson (1975). In some cases the statistical significance of the relationship is weak, the number of variables that have been used in the analysis is small, and the dependent variable has usually been the median property value of a census tract, an unreliable measure. Estimates must therefore be treated with some caution.

It is unlikely that the full effect of air pollution would be reflected in property values. First, people experience some of the discomfort and esthetic damages when they are away from home—on commuting, shopping, or leisure trips. Because these aspects of damage are not a function of residential location, they are unlikely to be reflected in depressed property values. Second, to the extent that an entire urban area suffers high levels of pollution, then property values may reflect only the marginal damages in areas of excessive concentration and may not include the damages attributable to the *base* level of pollution.[19]

Alternative approaches have been developed to measure pollution damages. The first, pioneered by Ridker (1967) attempts to measure the separate aspects of pollution damages, the most important damage categories being the health effects and the materials damages. The annual health cost of air pollution nationwide, in terms of reduced life expectancy and increased frequency of illness, has been estimated between $360 million[20] and $2 billion (Lave and Seskin, 1970).[21] The annual materials damages, including increased frequency of cleaning and physical deterioration, have been estimated at between $150 per household (Cohen, Fishelson, and Gardner, 1974), and $72 (Barrett and Waddell, 1973) and as much as $6 billion annually nationwide (Waddell, 1974).

Pollution damages have also been assessed through their influence on wage and prices. Workers demand higher wages to work in a heavily polluted city. For example, per capita wages in Chicago would be reduced by $240 a year if pollution levels were reduced to 60 micrograms per cubic meter (Izraeli, 1973a).

Recreational Open Space. Only a small fraction of a household's time is spent working; the rest is spent in the pursuit of leisure time activities. The availability of open space for the jogger, dog-walker, or picnicker is an important consideration in the selection of a residential location. In large industrial cities open space has been pushed further and further away from the average city dweller.

Demands for urban recreational space have grown. Failure to meet these demands adequately has led to declining property values and social discontent. The National Advisory Committee on Civil Disorders (1967) found that inadequate recreational facilities ranked fifth (immediately after the neglect of education) among the reasons for discontent among urban blacks.

Households in the central city are the least equipped to meet their own outdoor recreation needs. Many live in apartments in areas of high residential density. In the central city, 40 percent of the households are without automobiles, compared

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[19] Only if households can migrate costlessly among cities of varying levels of pollution will the full value of pollution damages be reflected in property value differentials (Polinsky and Shavell, 1975; Strotz, 1966).

[20] Ridker's (1967) estimates yield an annual average cost of about $10 per household if these costs are borne by the 40 million metropolitan households in the United States.

[21] Barrett and Waddell (1973) estimated the annual health cost of pollution in urban areas at $152 per household. Cohen, Fishelson, and Gardner (1974) placed the annual health cost of pollution at $150 per household in Chicago. This is assuming that there are costs of pollutants only when their level exceeds 60 micrograms per cubic meter and that the average level (in Chicago) is 100 micrograms per cubic meter. Of this $200 per year, $16.20 is from loss of earnings because of reduced life expectancy, $51 because of other costs of reduced life expectancy, and $84 because of increased health care expenses.

Table 25

SUMMARY OF PROPERTY VALUE STUDIES

Study	City (Year)	Pollution Measure	Pollution Elasticity	R^2	Marginal Capitalized Damage
Ridker and Henning (1967)	St. Louis (1960)	Sulfation[a]	linear	.94	100[b]
Zerbe (1969)	Toronto (1961)	Sulfation[a]	-.12	.94	97[b]
	Hamilton (1961)	Sulfation[a]	-.08	.92	
Anderson and Crocker (1971)	St. Louis (1960)	Sulfation	-.10	.76	
		Suspended particulate	-.12[c]		
	Kansas City (1960)	Sulfation	-.08	.82	300-700[c]
		Suspended particulate	-.09[c]		
	Washington, D.C. (1960)	Sulfation	-.07	.70	
		Suspended particulate	-.06[e]		
Crocker (1970)	Chicago (1964-67)	Sulfur dioxide	.06[e]	.77	470[d]
		Suspended particulate	-.40		
Peckham (1969)	Philadelphia (1970)	Sulfation	-.10	.76	600-750[c]
		Suspended particulate	-.12		
Spore (1972)	Pittsburgh (1970)	Sulfation	+.03[c]	.81	150-200[e]
		Dustfall	-.12		
Nelson (1975a)	Washington, D.C. (1970)	Suspended particulate	-.06	.88	300-400[f]

SOURCE: U.S. Environmental Protection Agency, *The Economic Damages of Air Pollution*, EPA, Washington, D.C., May 1974, p. 51. Individual studies are listed in the References section of this report; Jon P. Nelson, *The Effects of Mobile-Source Air and Noise Pollution on Residential Property Values*, Institute for Research on Human Resources, Pennsylvania State University, University Park, April 1975.

[a] Single pollution variable probably measures effect of both sulfation and suspended particulates.

[b] Mean change in MPV per change of .1 mg SO_3/100 cm^2-day.

[c] Not significantly different from zero at the .01 level.

[d] Mean change in MPV per change of .1 mg SO_3/100 cm^2-day plus 10 $\mu g/m^3$-day change in suspended particulates.

[e] Not significantly different from zero at the .05 level.

[f] Mean change in MPV per change of .001 parts per million/72 hrs. SO_2 plus 10 $\mu g/m^3$-day change in suspended particulates.

[g] Mean change in MPV per change of .005 parts per million/day of SO_2 plus a 5 tons/mi^2-month change in dustfall.

[h] Change in MPV per change of 10 $\mu g/m^3$-day.

with only 20 percent in suburban and rural areas. Yet all but 2 or 3 percent of the visitors to large outdoor recreation areas arrive by automobile. As a result, recreationists tend to be from middle or upper income groups. The demand for open space is increasing not only because of the urbanization of the population but also because of rising incomes, increased leisure time and a growing taste for the pleasures of recreation (Boyet and Tolley, 1966).

Proximity to a park tends to increase property values, although some property may be adversely affected (Table 26).[22] Premium prices paid for locations near a park have been estimated at approximately $1500 per property for a site within 300 feet of the edge of a park, about 8 percent of the value of the property. However, the effect of a park appears to depend upon a number of factors, including its size and design, the value of adjacent property, and the availability of other open space in the community. Fear of crime, crowding, litter, or noise generated by park users may actually depress property values in some places (Hammer et al., 1971; Hendon, 1974). Those parks that adversely affected property values in Hendon's study were situated in poor neighborhoods.

Table 26

SUMMARY OF STUDIES RELATING PROPERTY VALUES AND OPEN SPACE

Study	Study Area	Estimated Effects (dollars)
Weicher and Zerbst (1973)	Columbus, Ohio	+3434 for house facing park. - 150 for house facing heavily used recreation areas.
Hendon (1974)	Dallas, Texas	Negative influence of two parks in low income areas.
Hammer et al. (1971)	Philadelphia, Pennypack Park	+1240 per property at less than 100 feet. + 138 per property at 2500 feet.
Vaughan (1974)	Chicago, small parks	+ 700 to 15,000 for property within 2000 feet. +2000 to 3000 for property within 300 feet. + 100 to 300 for property between 1500 and 2000 feet.

Central city residents are more poorly served with recreational open space than their suburban counterparts. Although this has not been linked to suburbanization, the increase in property values associated with access to open space reflects the value of this amenity to households.

Public Safety. No other urban problem has received as much publicity as crime. The local crime rate cannot be regarded as an independently determined variable that affects a neighborhood in the same way that air quality can. The behavior of the local community—through informal patrols (Yin et al., 1976), block clubs, and the type of people attracted to the neighborhood—may influence the local crime rate. An increase in local crime may drive out residents, and those leaving may be replaced by groups with a greater tendency toward criminal behavior, leading to a further escalation in crime rates. A second problem is the poor quality of available data. Many crimes go unreported and data are rarely available at the neighborhood level; households may be concerned only with crime within a few blocks of their home. Finally, households seek a feeling of public safety; therefore, although the actual crime rate is important, other factors, such as the "visibility" of police patrols, may affect the local sense of public safety.

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[22] See Darling (1973); Grimes (1968); Hammer, Horn, and Coughlin (1971); Hendon (1973 and 1974); Kitchen and Hendon (1967); Knetsch (1964); Lyon (1972); Vaughan (1974); Weicher and Zerbst (1973); and Weiss et al. (1966).

Metropolitan areas experience higher reported crime rates than other areas in the nation. In 1974, the crime rate for all offenses was 5622 per 100,000 people in SMSAs; it was only 4027 in other urban areas and 1746 in rural areas. These rates of reported crime represent a significant increase over comparable rates in the 1960s. Nationally, the rate of reported crime more than doubled between 1964 (2374) and 1974 (4821), growing by 231 percent in SMSAs, by 324 percent in other urban areas, and by 218 percent in rural areas. The total cost of crime in 1965 was estimated at $13 billion and the cost of crime prevention at $6 billion, a total that represented nearly 3 percent of Gross National Product.[23] Of the crime prevention total, 46 percent was spent on police, 22 percent on prevention services (Council on Municipal Performance, 1973, p. 7). Large cities spend over $62 per capita on police services, small cities about $25 (*Fiscal Conditions*).

Reported crime rates vary by city size, although these differences may be due, in part, to differences in the reporting rate. Large cities experience much higher crime rates than smaller cities. In 1971, cities with populations exceeding 1 million experienced a total crime rate of 5778 offenses per 100,000; those with populations between 500,000 and one million, a rate of 5406; and those with populations of less than 100,000, a rate of only 1829.

These differences in crime rates by city size mask great variations among cities, even among those of comparable size. Crime rates in 1964 and 1974, for the 30 largest cities and their suburbs, are shown in Table 27. In 1974, Denver experienced a crime rate of 9271 offenses per 100,000 people, while Milwaukee, a city of comparable size, had a rate of only 4707. All cities and their suburban rings experienced a sharp increase in crime during this decade. In all SMSAs in this sample in 1964, and in all but one in 1974, crime rates in the central city exceeded those in the surrounding suburbs. However, there has been a decline over time in this differential. The ratio of central city to suburban crime rates increased in only three of the 30 SMSAs. The unweighted average declined from 2.9 to 2.0 during the ten years. This may, in part, have resulted from a change in the rate of reporting. Although public safety is still a reason to seek a suburban rather than a central city home, the incentive is diminishing.

Surprisingly little rigorous empirical analysis has been performed on the effects of crime rates on residential location. Central city crime rates do appear to be related to the outmigration of whites. As much as 30 percent of the variation among cities in the outmigration rates of white households from central cities may be explained in variations in the crime rate (Council on Municipal Performance, 1973). However, in a detailed analysis, in which deconcentration rates among cities (measured by changes in density gradients) were related to crime and minority presence, Guterbock (1976) found only a weak link between crime and suburbanization. Droettboom et al. (1971) found little connection between crime and residential location. Kain and Quigley (1970a) found that the numbers of major crimes in a neighborhood had no effect on either the value of owner-occupied property or the rents when other variables were taken into account. The lack of evidence belies the

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[23] Of the estimated total cost of crime, more than 60 percent was attributed to victimless crimes. These costs should properly be regarded as transfers and, therefore, should not be included in social cost estimates.

Table 27

TOTAL CRIME RATES PER 100,000 INHABITANTS AND PERCENT CHANGE IN 30 LARGEST CITIES AND THEIR SUBURBS, 1964 AND 1974

	Central City			Suburbs			Ratio of Central City to Suburb		
Area	1964	1974	% Change	1964	1974	% Change	1964	1974	% Change
Atlanta	3202	9,789	+205.7	802	3530	+340.1	4.0	2.8	- 30.0
Baltimore	1985	8,414	+323.9	1161	5156	+344.1	1.7	1.6	- 5.8
Boston	2728	10,253	+275.8	1080	4141	+283.4	2.5	2.5	0
Buffalo	1838	5,453	+196.7	769	3263	+324.3	2.4	1.7	- 29.2
Chicago	3303	7,224	+118.7	873	4793	+449.0	3.8	1.5	- 60.5
Cincinnati	1366	6,799	+397.7	819	3472	+323.9	1.7	2.0	+ 17.6
Cleveland	1970	6,927	+251.6	515	3406	+561.4	3.8	2.0	- 47.4
Dallas	1890	9,745	+415.6	920	2340	+154.3	2.1	4.2	+100.0
Denver	2959	9,271	+213.3	927	5913	+537.9	3.2	1.6	-100.0
Detroit	2440	9,220	+277.9	1517	6351	+318.7	1.6	1.5	- 6.3
Houston	2962	7,388	+149.4	1073	1778	+ 65.7	2.8	4.2	+ 50.0
Indianapolis	2692	4,591	+ 70.5	760	7758	+920.8	3.5	0.6	- 82.9
Kansas City, Missouri	3168	8,023	+153.3	966	4683	+384.8	3.3	1.7	- 48.5
Los Angeles	4282	7,660	+ 78.9	2553	6547	+156.4	1.7	1.2	- 29.4
Miami	4661	11,443	+145.5	1451	8300	+472.0	3.2	1.4	- 56.3
Milwaukee	1345	4,707	+250.0	545	3597	+560.0	2.5	1.3	- 48.0
Minneapolis	2944	7,754	+163.4	1399	4316	+208.5	2.1	1.8	- 14.3
Newark	5199	8,558	+ 64.6	995	4262	+328.3	5.2	2.0	- 61.5
New Orleans	3125	6,556	+109.8	NA	2844	NA	NA	1.7	NA
New York	2228	6,584	+195.5	828	4960	+499.0	2.7	1.3	- 51.9
Philadelphia	1603	4,192	+161.5	841	4170	+395.8	1.9	1.0	- 47.4
Phoenix	3737	13,285	+255.5	451	4534	+905.3	8.3	2.9	- 65.1
Pittsburgh	2741	5,626	+105.3	552	2191	+296.9	5.0	2.6	- 48.0
Portland	2618	10,917	+317.0	1135	1601	+ 41.1	2.3	6.8	+195.7
St. Louis	3559	10,675	+199.9	1009	4903	+385.9	3.5	2.2	- 37.1
San Diego	1721	7,582	+340.6	1237	4582	+270.4	1.4	1.7	+ 21.4
San Francisco	3284	7,809	+137.8	1943	7378	+279.7	1.7	1.1	- 35.3
San Jose	2459	8,697	+253.7	1067	5517	+417.1	2.3	1.6	- 30.4
Seattle	2104	8,669	+312.0	1430	5648	+295.0	1.5	1.5	0
Washington, D.C.	3002	7,218	+140.4	1526	5481	+259.2	2.0	1.3	- 35.0

SOURCE: Compiled from Federal Bureau of Investigation, *Uniform Crime Reports—1974*, U.S. Department of Justice, Washington, D.C., 1974, pp. 73-134; and Federal Bureau of Investigation, *Uniform Crime Reports—1964*, U.S. Department of Justice, Washington, D.C. 1964, pp. 69-87, 171; Bureau of the Census, *Statistical Abstract of the United States: 1971* (92nd ed.), U.S. Department of Commerce, Washington, D.C., 1971, pp. 19-23.

NA means not available.

attention focused on crime in public debate and in the formation of the Law Enforcement Assistance Administration.

Urban Diversity. A large city offers diversity—choice of shops, museums, theaters, restaurants, and even of neighborhoods and housing. Two hundred years ago, Dr. Samuel Johnson observed that "when a man is tired of London, he is tired of life; for there is in London all that life can afford." Local governments have committed considerable resources to creating cultural amenities. Detroit, with financial assistance from the automobile industry, has created the Renaissance Center in an attempt to rebuild its downtown area. The Center offers cultural facilities as well as offices. Cleveland has introduced noon hour concerts to attract shoppers downtown; Pittsburgh's new civic center has incorporated theaters and museums; and New York City's revised zoning laws in the 1960s were specifically designed to encourage theater construction. Large cities have tried to attract both people and business through these measures. To some, this diversity is an attractive feature of large central cities that suburban areas and small towns cannot rival. Not only does the choice allow households to find consumer goods more exactly congruent with their tastes, or to indulge in a wide variety of leisure time activities, but the very existence of the opportunities—even if not all are exercised—may be regarded as an amenity. However, we understand very little of the value of these amenities to urban dwellers.

Diversity acts as a magnet for higher income, young households without children, the types of households that tend to live in central city locations (Kain, 1968; Zuiches and Fuguitt, 1971). Thompson (1972) argues that the gains from diversity in large cities vary systematically and positively with socioeconomic status of the household. High income households benefit more than do low income households. However, there has been little study of the importance of museums, theaters, and other aspects of urban diversity in shaping patterns of residential location. Discussing the "ambience" of urban life, Fischer (1975, p. 216) summarizes:

> To some, the buildings, people, facilities, and bustle of cities are attractions; others will gladly forsake them for fewer people and more trees. These are "intangibles," hard to measure or even define, which fall within the category of personal taste.

LOCAL PUBLIC SERVICES AND LOCAL TAXES

The structure of the local public sector within a metropolitan area has played a role in shaping patterns of residential settlement. Although it has probably been less important than accessibility and amenities in influencing the flight to the suburbs, it has helped shape the economic and social characteristics of city and suburban population. When selecting a place to live, a prospective homebuyer or renter considers the quality of neighborhood schools, the adequacy of police protection, and the availability of municipal garbage collection services, as well as the local tax rate. However, the influence of these factors differs among household types. Tax rates are important to high income households and school quality to households with school age children, for example. Further, the system is dynamic. The types of households that are attracted to a jurisdiction by the quality and the "tax price" of local public services offered will affect the tax base and the demand for public services in that jurisdiction, and they, in turn, affect local government decisions.[24]

This process has led to an inequality in the fiscal capacities of central cities and some of their more affluent suburbs. A jurisdiction within a metropolitan area that succeeds in attracting affluent households boosts its residential tax base while incurring little increase in demand for social services. Where local fiscal capacity expands rapidly relative to service needs, residents may enjoy a lower tax rate than less fortunate jurisdictions. Meanwhile, many central cities offer less attractive tax service packages and continue to lose middle income households and job opportunities to suburbs.

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[24] The effect of changes in the level of composition of the local population on the tax base and the demand for local public services are discussed in more detail in *Fiscal Conditions*. This section is concerned only with the effect of the local public sector upon urban population and housing.

The Theory of the Local Public Sector and Residential Location

Tiebout (1956, p. 418) outlined what has emerged as a dominant view regarding the effects of local taxes and services on residential location: "Given . . . local revenue and expenditure patterns, the consumer-voter moves to that community whose . . . menu of taxes and services best satisfies his set of preferences." This implies two propositions:

1. Households will respond to differences in the levels and tax prices of public services *among* jurisdictions, trading off lower taxes against higher quality services to obtain a preferred combination. The outcome of this tradeoff may vary systematically with characteristics of the household itself. For example, a high income household with several children may prefer to live in a jurisdiction that offers high per student expenditures on schooling, even if this is accompanied by fairly high tax rates.
2. Households will also respond to the degree to which they may benefit from the redistributional aspects of the local fiscal system—to the share of local service costs they will be required to shoulder. For example, a high income household will tend to move away from a jurisdiction that provides comprehensive services for a significant number of low income households and to move toward a more homogeneous jurisdiction where it will both bear a smaller share of the tax burden and receive a larger share of the services being financed.

Many factors determine local residential tax rates and the quality of public services: the distribution of local revenues among commercial, manufacturing, and residential property; the availability of funds from the state and federal sources; and the extent to which the municipality benefits from "spillovers" from services provided by other jurisdictions.

The complexity of measuring the influence of the public sector on residential location means that empirical results must be treated with caution. First, it is difficult to measure the quantity and quality of local public services enjoyed by a particular population or by households residing at a particular location.[25] Second, accurate measurement of the tax burden borne by households in different jurisdictions is also difficult. Rates vary not only among jurisdictions but also among communities within a jurisdiction. Some neighborhoods become fashionable and prosper, while others decline; and reassessment rarely keeps pace with these changes. Third, there is no standardized package of municipal services, so a given tax rate may yield very different menus of public services to households in different jurisdictions. Finally, data on changes in the population composition of a jurisdiction—possibly in response to public sector decisions—are available only during decennial census years.

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[25] This issue is discussed in detail in *Fiscal Conditions*.

Empirical Evidence

Models derived from the Tiebout hypothesis have been used to analyze patterns of residential location among political jurisdictions in metropolitan areas and also the effects of local public sector activities on local property values.

Interjurisdictional Location. Different types of households respond differently to local government behavior. However, local government behavior has generally not been a major influence on the shift of the population from central city to suburban areas.

Mayo (1971) found that neither taxes nor public expenditures appear to be major determinants of residential location.[26] He examined the role of four municipal fiscal practices on residential choice: total per capita public expenditures; per pupil education expenditure; school and property taxes; and proportion of the municipal budget allocated to schools, recreation, highways, police, and fire. In addition, he considered average student achievement scores on standardized tests as an output measure of school quality. Mayo's studies demonstrate the importance of accessibility and the quality of the housing unit in determining residential location choice, but "the influence of . . . public services and taxes . . . probably cannot be considered a major locational factor." He argues (1971, p. 237) that definitive hypothesis testing must "await the development of better data on (public service) output measures [as well as] availability of more disaggregated tax data."

Friedman (1975) extended the analysis of residential choice to include the notion of selection among discrete, "lumpy" alternatives. Like Mayo, Friedman concludes that local public services are only marginally important in determining residential choice and that the most important determinant of a household's residential choice is the amount it can obtain in a city."

Orr (1975) approached the same problem of residential choice at a higher level of aggregation, with a model designed to relate residential and industrial land use densities to local fiscal behavior. His general finding was that expenditures for police and fire protection, water and sewers, and highways display a "uniformly insignificant" influence on household residential choice. He notes that it is possible these services are important in the process of residential selection, but the highly aggregated data may have prevented the identification of their influence.

Differences in public sector activities have contributed to the concentration of low income households in central city jurisdictions. Higher income households have moved to the suburbs seeking jurisdictions with homogeneous, high income population to minimize the taxes they must pay to redistribute money to the poor, but the poor are attracted to high taxing locales to take advantage of the implicit transfers.[27] Net fiscal surplus[28] significantly explains household residential choice (Bradford and Kelejian, 1973, p. 567):

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[26] His research was based on a "probabilistic model of residential choice" in which the likelihood that a household chooses a residence at a particular location in an urban area is explained as a function of: (1) distance from the workplace of the primary wage earner; (2) rent; and (3) public services, physical characteristics of the housing stock, neighborhood and demographic attributes, land uses, and accessibility to shops.

[27] For example, see Aaronson and Schwartz (1973); Bradford and Kelejian (1973); Miller and Tabb (1973); and Netzer (1968).

[28] Net fiscal surplus is defined as the value of local public services received minus the local taxes paid. Differences in the effect of the local public sector according to income are also observed by Mayo (1971) and Orr (1975). However, Mayo notes (p. 237) that the influence of educational outlays is "spotty" and confined largely to those with the highest incomes, who tend to locate in jurisdictions with high educational outlays, usually suburbs, a finding reinforced by Friedman's work.

> A middle-class family of given income is more likely to reside in the suburbs the higher was the percentage of central-city families 10 years earlier who were poor, the higher is the median family income of the urbanized area (a measure of rent gradient), and the lower is the fiscal surplus generated for middle-class families by the central-city public budget (an estimate of the net dollar value of the central-city budget to a middle-class family.
>
> A poor family is more likely to live in the suburbs the greater is the proportion of the housing there that is old—the lower is the proportion of the central-city housing that is old, and the lower is the fiscal surplus for poor families in the central city.

This selective suburbanization results in the fragmentation of municipal jurisdictions resulting in economic segregation (Aaronson and Schwartz, 1973).

Ellickson (1971 and 1977) introduced a model that simultaneously determines both the residential location of households across several communities and the pattern of local revenues and expenditures in each community. This is one of the first modelling efforts in which the level of local taxes and services is determined, in part, endogenously. He concluded that subdivision into income-homogeneous communities will necessarily improve the welfare of wealthy households but lower the welfare of poorer households because their communal tax base will be reduced. Low income households in a heterogeneous jurisdiction will, therefore, tend to oppose subdivision, while wealthy residents may further their own interests by splitting off to form a more homogeneous and wealthy suburb. There is little evidence, however, that suburbs are able to maintain their homogeneity. There is considerable heterogeneity with respect to income among suburban towns, although there is some volitional sorting with respect to education and occupation (Pack and Pack, 1977).

These results suggest the likelihood of continuous residential flux as high income communities with low tax rates and high levels of service are beset by an influx of low income families seeking to reap the available fiscal surplus. However, Hamilton (1972 and 1973) and Bradford and Oates (1974) argue that zoning ordinances may stabilize the system by restricting the entry of low income households into certain communities by placing a minimum size on the lot where a house may be built and introducing other requirements that increase the cost of housing construction above the level a low income family can afford.

The efforts of upper income households to establish economically homogeneous communities and consequent jurisdictional fragmentation may contribute to urban sprawl (Muth, cited in Hansen, 1975). Muth finds, "the lower the average income level of the central city relative to its suburbs, the smaller is the central city's population and the larger is the land area occupied by the urbanized area," a result that can be explained in terms of the local fiscal structure (cited in Hansen, 1975, p. 79). The fragmentation of the local government structure within metropolitan areas has contributed significantly to segregation among jurisdictions by economic characteristics.

Property Values, Taxes, and Public Services. Evidence generally confirms that an increase in taxes leads to a decline in property values, while an increase in the level of public services tends to raise property values, all else being equal. The extent to which changes in local taxes or services are capitalized in property values determines the incidence of the property tax and has important implications for the housing stock and the residential choices of households. For example, a property tax that operates as an excise tax on housing may induce families to cut back their level of housing consumption in response to a tax increase. Similarly, real estate developers may react to the reduction of return on investment resulting from a property tax increase by reallocating their capital into alternative investments.

A number of studies have found substantial evidence of tax capitalization. Oates (1969) explicitly merged the tax capitalization issue with the Tiebout hypothesis of residential choice, contending that under such a model, consumer demand for preferred tax and public expenditure packages will be reflected in demand-determined property values. Using data on 53 residential municipalities in northeastern New Jersey, Oates estimated a model in which median home value was a function of the housing stock, accessibility, socioeconomic attributes, effective tax rates, and per pupil school expenditures. The strong and highly significant negative coefficient of the tax variable caused Oates to conclude that roughly two-thirds of the differences in tax rates had been capitalized.

Other cross-sectional studies have tested for tax capitalization while controlling for an array of other dwelling unit and neighborhood characteristics (King, 1973; Mayo, 1973; Smith and Deyak, 1975). Their results, although mixed, offer some evidence that partial capitalization occurs. King (1973, p. 96) for example, concludes by distinguishing formal and informal variations in property tax and suggesting several circumstances that may determine the extent of tax capitalization in a locale:

> The extent of capitalization ... [seems to be] critically dependent on the visibility and certainty of tax variations. When differentials arise mostly from assessment vagaries, capitalization is unlikely; but when tax changes occur which are more-or-less uniform and highly visible to potential buyers, full capitalization seems probable.

Perhaps the strongest evidence for capitalization comes from studies that have drawn on natural experiments. Wicks, Little, and Beck (1968) tested for changes in market values of homes in a Montana municipality before and after a change in the effective property tax rate. They observed that a $1.00 increase in tax bill appeared to reduce sales price by roughly $19.00, indicating capitalization at a rate of 19:1. Smith (1970) studied changes in the value of single family homes in San Francisco that accompanied a 1967 changeover to uniform tax assessment rates. Empirical analysis indicated that property values would decline by between $14 and $21 for each dollar increase in property taxes.

Moody (1973) also studied the effects of tax changes in the San Francisco area using a fortunate natural experiment in 1962 where residents of San Francisco and its surrounding counties voted whether to support rapid transit and incur the increased property taxes it would necessitate. Although San Francisco opted to participate and neighboring San Mateo county did not, a previously planned transit stop on the border of San Francisco and San Mateo's Daly City was installed. The result is that Daly City residents have access to the subway at no cost in property taxes while their San Francisco neighbors bear the cost in a tax increase of $10 to $15, which depressed sales prices by roughly $900. However, not all of the empirical evidence yields indications of capitalization (Daicoff, 1961; and Mayo, 1971).

The extent to which changes in property taxes are passed on in the form of rent increases or are borne as a capital loss by landowners is an important issue for determining maintenance expenditures and the redistributive effect of taxes, because tenants tend to be poorer than owner-occupiers. Therefore, if a large share of property tax increases are passed on, low income groups may be significantly affected. However, if landlords experience a decline in the return of their investments as a result of a tax increase, then the result may be a reduction in building maintenance and consequent decline in quality of the rental housing stock.

A number of studies have attempted to estimate the relationship between property taxes and rentals.[29] Orr (1968, p. 262) challenged the traditional economic view and, using data on tax rate and residential rent differentials among 31 communities in the Boston area, demonstrated that "tax differentials did not appear to give rise to significant rent differentials." He concluded, "if [it appears] tax differentials are borne by property owners, they provide an additional barrier to investment in new housing and the renovation of run-down housing." However, his work has been heavily criticized on a number of counts (Coen and Powell, 1972; and Heinberg and Oates, 1970). Smith and Deyak (1975) studied 85 major SMSAs. They found that effects of tax rates on property values were capitalized, but in the rental market the tax rate variable was not as statistically significant.

There is also evidence that the quality and level of public services affect property values. Mayo (1971) examined the effects of per capita levels of total municipal outlays on property values and found a small, although highly significant, positive effect—an increase of $100 in per capita municipal expenditures across all public services produced an increase of roughly $8.60 in property values at the mean. Mayo also includes a wide array of local tax and expenditure variables in his equation so that collinearity among the outlay figures may decrease the size of the general expenditure coefficient.

Because education accounts for roughly 42 percent of total local public expenditures, it has been the most frequently analyzed of local public services. However, the relationship is not one way. An influx of high income households enhances both the attractiveness of a neighborhood and the students' performance at local schools. Studies relating school quality and property values may confound the roles of high income households in making a neighborhood attractive and in providing good students. Mayo (1971) found that a 1 percent increase in school outlays was associated with a rise in property values of $6754. This seems an implausibly high estimate. Other research has found a positive influence on property values of various output measures of school quality. For example, Grether and Mieszkowski (1974) found that increases in both the reading percentile in local elementary schools and the teacher-pupil ratio would lead to increases in property values. They estimated that moving a home from a school district that ranked in the 50th percentile to one that ranked in the 90th would increase the value of an average house by about $2000 (about 9 percent of the median property price on their sample) and that reducing the teacher/pupil ratio from 30:1 to 25:1 would increase the property values by about $1000. Similarly, Kain and Quigley (1975), using standardized achievement scores as a measure of school quality, found a positive effect of quality education on housing prices in both the owner and rental markets. Renters were willing to pay $31 per year to live in neighborhoods where student achievement in the schools was one year above the city average, and owners paid roughly $490 for the same feature. King (1973) found the percentile of achievement in the local schools on standardized test scores to have almost as strong an effect on housing values as general neighborhood quality—as much as $5288 if a local school were to dramatically improve in quality.

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[29] See, for example, Coen and Powell (1972); Heinberg and Oates (1970); Jenkins (1971); Orr (1968 and 1972); and Smith and Deyak (1975).

Mayo (1971) observed that a 1 percent increase in municipal expenditures on fire and police or on highways was associated with an improbable $13,663 and $6578 decrease in property prices, respectively. These negative values may be attributable to high levels of police, fire, and highway outlays in the center city. Conversely, a 1 percent increase of recreational expenditures as a fraction of the municipal budget produces a startling $42,950 increase in property values.[30] In a second such study, King (1973) found that a 1 percent increase in a composite variable representing general service levels to have a significant positive effect of $2228.

There is some evidence that the degree to which changes in tax rates or in the level of municipal services are capitalized is greater in the short run when the supply of housing and of public services has not fully adjusted to the tax change. Studies that have uncovered a significant degree of capitalization may have been based upon short run tax or service quality differentials. In the long run, market response to such differentials may be evidenced mainly in the quantity and quality of the housing stock. However, the adjustment problem is further confounded because, as property values shift and as the composition of the local population changes, the menu of local public services offered by a jurisdiction may also undergo adjustment—a response that Tiebout had hypothesized. Specifically, a local government will tend to adapt its services to suit its residents. Edel and Sclar (1974) examined this "market" response of local governments, using an approach similar to that used by Oates in his capitalization study. The authors examined the relation between housing values and both local taxes and public services in the Boston area over time. They report (p. 942):

> For schooling, there was a movement toward competitive equilibrium between 1950 and 1970. However, both continued tax capitalization despite the declining capitalization of school-expenditure differentials and the continuing failure of highway-expenditure differentials to be capitalized indicate that supply conditions are not moving toward equilibrium in the markets for all public services. These empirical findings indicate that the Tiebout hypothesis cannot be considered as verified for local public service markets in general, but only for some particular local service markets.

Taxes, Public Services, and Housing Investment Decisions. The general view is that property taxes disrupt the operation of the housing market and act as a disincentive to upgrading and new construction and as a facilitator of downward transition and blight. However, the disincentive effects of the tax depend upon the extent to which the quality and quantity of public services enjoyed at the location are valued at an amount below their tax price. Peterson et al. (1973, p. 2) noted:

> Placing a tax on a good must either raise the price consumers pay for the good or lower the profit producers can earn from supplying it. In either case,

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[30] Recreational expenditures generally constitute a much lower portion of total municipal expenditures than the other categories discussed, and large percentage increases are unlikely. The relationships between property values and urban open space and public safety, both indirect measures of the quality of local public services, are discussed above.

> the imposition of a tax is likely to lead to a lower level of provision of the good in question. If this reasoning is right, an increase in property tax rates may lead directly to a lower supply of new housing or . . . it may discourage upgrading and rehabilitation of the current stock and accelerate the decision of landlords in low-income areas to abandon their housing altogether.

Peterson et al. conducted an extensive study of intraurban variations in effective tax rates and attempted to assess their effects on upward transitional and stable neighborhoods as well as on downward transitional and blighted neighborhoods. The authors note substantial variation in tax rates between various types of neighborhoods within a given fiscal jurisdiction. For example, property in stable neighborhoods tends to be taxed at a much lower rate than property in blighted neighborhoods (see Table 28). In general, upward transitional neighborhoods enjoy the lowest tax rates of all. Peterson et al. (1973, p. 23) state:

> Despite the fact that uniform taxation within each city is mandated by law, the neighborhood variation in several cities exceeds the variation in legal rates adopted by different cities. In Chicago and Baltimore, the sample properties in blighted neighborhoods pay property taxes at a rate ten to fifteen times higher than properties in upward transitional neighborhoods. In these cities, the regressivity of the property tax's effective rate structure is due principally to neighborhood bias in assessments.

One criticism frequently levelled at the property tax is that if housing improvements lead to reassessment and tax increases, the additional tax will constitute a

Table 28

MEDIAN EFFECTIVE TAX RATES FOR SAMPLE PROPERTIES BY NEIGHBORHOOD AND CITY FOR SELECTED CITIES, 1970[a]

(In percent)

City	Stable Neighborhood	Upward Transitional Neighborhood	Downward Transitional Neighborhood	Blighted Neighborhood
Atlanta	2.1	2.1	2.2	4.6
Baltimore	1.6	1.4	9.8	14.9
Chicago	5.2	0.8	4.7	10.7
Detroit	3.1	2.8	3.5	3.0
Nashville	1.5	1.2	1.3	0.9
Oklahoma City	1.5	1.5	2.3	1.7
Philadelphia	1.6	1.0	1.9	9.3
Portland	2.2	2.1	2.6	1.6
Providence	1.2	1.0	—	5.2
San Francisco	2.2	2.0	2.5	1.9
All cities	1.9	1.4	2.5	3.8
Total number of properties	84	96	84	85

SOURCE: George E. Peterson et al., *Property Taxes, Housing and the Cities*, D. C. Heath, Lexington, Mass., 1973, p. 22.

Sample: All residential properties reporting estimated market value for 1970.

[a] Effective tax rate is property tax as a percentage of owner-reported market value of the property.

disincentive to investment and upgrading. However, Peterson et al. (1973, p. 29) found that:

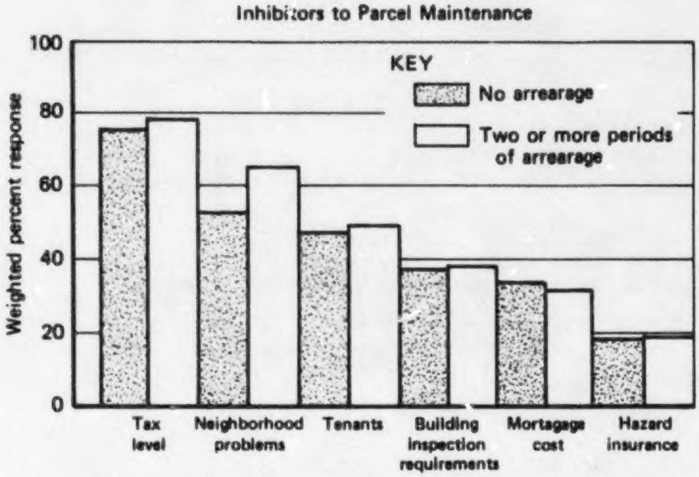
> Not a single improvement effected by private investors in blighted neighborhoods resulted in reassessment. Typically, property values are already overassessed in these neighborhoods, and even major increases in market value leave this situation unaltered. Assessors seem to recognize this fact and refuse to further penalize landlords in blighted neighborhoods by reassessing as a result of repairs or rehabilitation.

In contrast, 5 out of 26 properties rehabilitated in stable and upward transition neighborhoods were reassessed. Peterson et al. (1973, p. 36) cited interviews with investors indicating "fear of reassessment played a relatively small role in their decision whether or not to make improvements to a parcel.... Even among homeowners, fear of reassessment was not considered to be a major obstacle to rehabilitation." Although the *marginal* increase in effective tax rate on upgraded property does not appear to constitute a major deterrent to investment in blighted neighborhoods, the *absolute* level of taxation does. Peterson et al. (1973, p. 53) note:

> For properties in the Newark study that were part of the original sample in 1964, and then restudied in 1971, 48.2 percent of the owners felt that the level of property taxes was the most important inhibitor to housing maintenance. The second most important obstacle was difficulty with tenants (23.4 percent). Yet only 16.5 percent of the property owners felt that tax reassessment was the most important inhibitor to property upgrading. Among the properties actually abandoned by 1971, the findings are similar. Only 10.2 percent of the respondents felt that tax reassessment was the most important factor. This meant that reassessments were considered a less significant obstacle than the actual level of the property tax (23.4 percent), tenant problems (45.8 percent), or building inspection requirements (16.9 percent).

Sternlieb and Burchell (1973) observed a similar influence of property tax levels on the maintenance of properties in downward transitional and blighted neighborhoods. Among the interviewed owners of poorly maintained parcels in Newark, 51 percent named taxes as their first or second priority problem. Among owners of reasonably kept properties, no less than 70 percent cited taxes, and mentions by owners of well-kept parcels were of comparable frequency. Second in importance were neighborhood problems and the behavior of tenants. These results are summarized in Fig. 9.

Low income housing is difficult to manage under the best conditions and is squeezed by rising operating costs on one hand and taxes on the other, inducing some landlords to undertake a run down strategy. Such landlords are often long time owners who have incurred substantial losses as property values have declined. Peterson et al. also suggest that high levels of property tax inhibit parcel maintenance in a second way by "impeding the transfer of properties from long time owners who are operating a run down strategy and want to sell to those investors who are potential purchasers and ... [operators] of slum properties." Both Peterson et al. and Sternlieb and Burchell observe the existence of healthy and active markets for housing operated by such people in numerous low income city neighborhoods. Sternlieb and Burchell cite tax arrearage and the added cost of absentee real estate management as the "key to the abandonment process."



SOURCE: Adapted from George Sternlieb and Robert Burchell, *Residential Abandonment: The Tenement Landlord Revisited*, Center for Urban Policy Research at Rutgers University, New Brunswick, New Jersey, 1973, p. 212.

Fig. 9—Inhibitors to parcel maintenance and improvements by tax arrearage (1971)

SUMMARY

Cities have grown up around centers of industries, and the desire to live close to work has resulted in high land prices at the city center and a gradient of land prices that declines with distance to the central business district. This gradient is reflected in high residential densities at the city center because of the sparing use of expensive land, and lowers with distance.

Over time the premium paid for accessibility has declined, resulting in a parallel decline in densities. The most important factor has been in the increased use of the automobile, which has reduced commuting costs per mile and allowed households to locate much further from the CBD. Second in importance has been the rise in real incomes, which encourages the purchase of larger houses, leading households to move to the suburbs where land is cheaper. However, for some upper income families, especially those with two wage earners, easy access outweighs the desire for more space. Finally, suburbanization of people has been abetted by the suburbanization of jobs. Businesses appear to be led by households in this process, but some other factors have also contributed to employment suburbanization, including easy freeway access and the preference for land-intensive, single-story manufacturing plants.

The central city is generally less attractive than the suburbs as a residential location. It is noisier, experiences more severe air pollution, has less access to recreational facilities, and suffers more acutely from high crime rates. For many of these factors, the larger the city, the more severe is the problem.

Conflicts in empirical results and differences in research techniques prevent a direct estimation of the relative importance of different amenities. However, a number of assumptions permit approximation of the relative cost of a central city rather than a suburban location with respect to all amenities with the exception of diversity (Table 29). The calculations are discussed briefly below.

Almost all suburban locations enjoy environmental noise levels below the threshold at which noise levels affect property values. Most central city homes suffer detrimental noise levels. The average effect on property values in 1972 in Chicago was $500, yielding an annual cost of $50.

Aircraft noise has limited effects. Perhaps only 2 percent of the population of an SMSA is severely affected. Airports are rarely near the centers of cities, so suburban areas suffer as much from aircraft noise as central cities. The average annual effect per household is probably between $4.50 and $9.00 annually.

Central cities experience air pollution levels considerably higher than those in suburban areas. Costs may lie between $250 and $350 per household annually (including health). Suburban costs may be only one-third of this.

Data concerning the availability of open space in cities and suburbs are not available. From a detailed sample of Chicago, it appears that only 25 percent of all central city homes were within 2000 feet of a park, an amenity that was worth an average of $1000 in increased property values, or $1000 per year. The average household therefore gained $25 annual services from recreational open space. If open space is available to twice the fraction of households in suburban areas, then the average property will be about $750, or $37.50 annually per household. A central city household enjoys $12.50 less open space annually in services than a suburban household.

There are no reliable recent estimates of the costs of crime. In 1965, the cost of crime (excluding victimless crime) and crime prevention was about $13 billion. The crime rate doubled between 1965 and 1972 and the cost of living rose by 30 percent. This may mean that the cost of crime in 1972 was $34 billion, or $170 per capita. Crime rates in central cities are 2.4 times crime rates in other areas. If costs are proportional to crime rates, then the one-third of U.S. households who live in central cities experience annual costs of $785, whereas noncentral city households experience annual costs of only $315.

Table 29

RELATIVE COSTS AND BENEFITS OF AMENITIES AT CENTRAL CITY AND SUBURBAN RESIDENTIAL LOCATIONS

(dollars)

Amenity	Average Annual Cost per Household of Central City Location Relative to Suburban Location	Average Annual Cost per Household in Central City	Average Annual Cost per Household in Suburbs
Environmental noise	40-60	40-60	0
Aircraft noise	0	4.50-9.0	4.50-9.0
Air pollution	150-250	250-350	100
Open space	0-12.50	25 in benefits	37.50 in benefits
Crime	470	785	315
Total[a]	660-792.50	1079.50-1204	320.50-325

[a] Excluding open space.

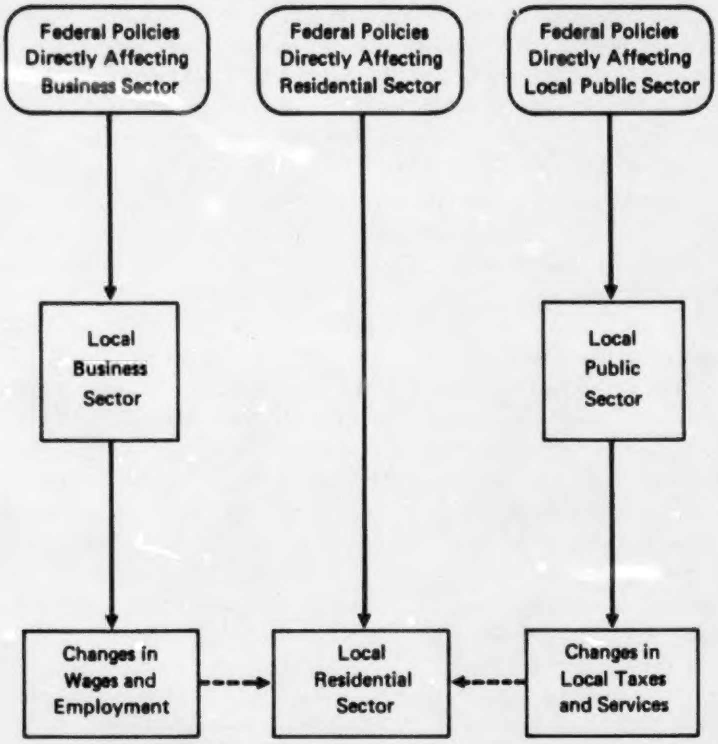
Central city households apparently endure annual disamenity costs between $750 and $900 greater than the costs in a suburban location. These costs are weighed against higher commuting costs from the suburbs. The quality of the environment has probably exerted a powerful effect in favor of suburbanization.

Differences between central cities and suburban jurisdictions in tax rates and the quality of public services apparently have not been a major influence in the urban decentralization of the population but have contributed to the selective character of decentralization, which has left central cities with a high concentration of the poor and minorities. High income households have moved to homogeneous suburban jurisdictions to avoid paying for locally financed public services that redistribute resources to the poor. There is also evidence that the pursuit of residential locations offering high quality public services at an attractive tax price leads to social stratification, jurisdictional fragmentation, and urban sprawl. High income households may use zoning ordinances that dictate a minimum lot size for local residential property to prevent low income households from moving into their community.

Local tax rates and quality of local public services are capitalized in local property values. In the rental market, these changes in capital value are only partially passed on in rent increases. Property taxes deter property improvement or maintenance. Neighborhoods in the process of decline tend to experience higher effective property tax rates than stable or upward transitional neighborhoods; these rates may contribute substantially to the downgrading of marginal housing units and even to eventual abandonment.

VIII. FEDERAL POLICIES AFFECTING SUBURBANIZATION

The suburbanization of metropolitan population has resulted, in large part, from rising incomes and increased automobile ownership. However, federal policy has favored suburban expansion and also contributed toward its selectivity. Housing policy has been the most influential. Homeownership subsidies allowed many households to move to the suburbs, while low income housing programs have typically concentrated on central cities. In addition to housing policies, federal programs have influenced suburbanization in the following ways:


Federal Policies Directly Affecting Business Sector
Federal Policies Directly Affecting Residential Sector
Federal Policies Directly Affecting Local Public Sector
Local Business Sector
Local Public Sector
Changes in Wages and Employment
Local Residential Sector
Changes in Local Taxes and Services

THE EFFECTS OF FEDERAL HOUSING POLICIES

Major federal programs encouraging homeownership include tax expenditures, mortgage guarantees, and federal infrastructure grants. Those buying homes through these programs have shown a marked preference for suburban sites; a one percentage point increase in homeownership is associated with a one percentage point increase in the single-family housing share of new housing construction (James, 1977). This preference arises for two reasons: First, federal policies have tended to favor new housing, which is more readily available in the suburbs; and second, as households increase their expenditure on housing through subsidies, the item they purchase more of is space (James, 1977; Muth. 1969). Households sacrifice accessibility for a suburban location where land prices are low.

This subsection explores the complex array of federal policies that have subsidized homeownership (the tax structure, mortgage guarantees, and infrastructure grants) and programs that provide housing assistance to the poor (special homeownership assistance, rental assistance, public housing, urban renewal, and code enforcement).

Income Tax Structure[1]

Federal income tax provisions have encouraged homeownership, particularly among high income households; they have encouraged investment in housing rather than in other assets; and, for owners of rental properties, they have encouraged rapid depreciation and new construction rather than rehabilitation.

Homeowners receive two major concessions from the income tax code: First, they are allowed to deduct mortgage interest and local property tax payments from their taxable incomes; second, the value of housing services enjoyed by homeowners from their property is not subject to tax. These benefits make up as much as three-quarters of total housing costs to homeowners and, perhaps, as much as one-fifth of total income (James, 1976). In addition, capital gains from the sale of residential property are not subject to capital gains tax if the proceeds are invested in another residential structure within 18 months of the sale. Tenants also receive a subsidy as the landlord passes these advantages, and the depreciation allowance, on to tenants.

Tax subsidies have generally been greatest for owner-occupiers, particularly those with higher incomes (James, 1976). The homeowner subsidy ranges from about 15 percent of the value of services received for households earning less that $4000 (but having taxable income) to 38.5 percent for households earnings $25,000 or more.[2] Tenants received a gross subsidy of 11.2 percent of the value of housing services they receive, regardless of their income. Aaron (1972) calculated that 70 percent of the tax savings in 1966—or $5 billion—was enjoyed by households with incomes in excess of $10,000, or less than 40 percent of the population. The regressive nature of the subsidy is even larger now, because there has been a steady decline in the number of households that itemize deductions on their tax forms. Homeowner tax advantages can be enjoyed only if deductions are itemized. In 1976, less than 30 percent of all households itemized—a decline from 58 percent in 1969.

These extensive subsidies have increased the rate of homeownership. James (1976, p. i) estimated that in 1970, the rate of metropolitan homeownership would have been six percentage points lower—54 percent rather than 60 percent—without the tax inducement. "About 2.8 million metropolitan homeowners would rent if the tax system were neutral with respect to housing tenure."

James (1976) estimated the effects of the tax incentives on homeownership by comparing homeownership rates by income class in 1940 (before tax incentives

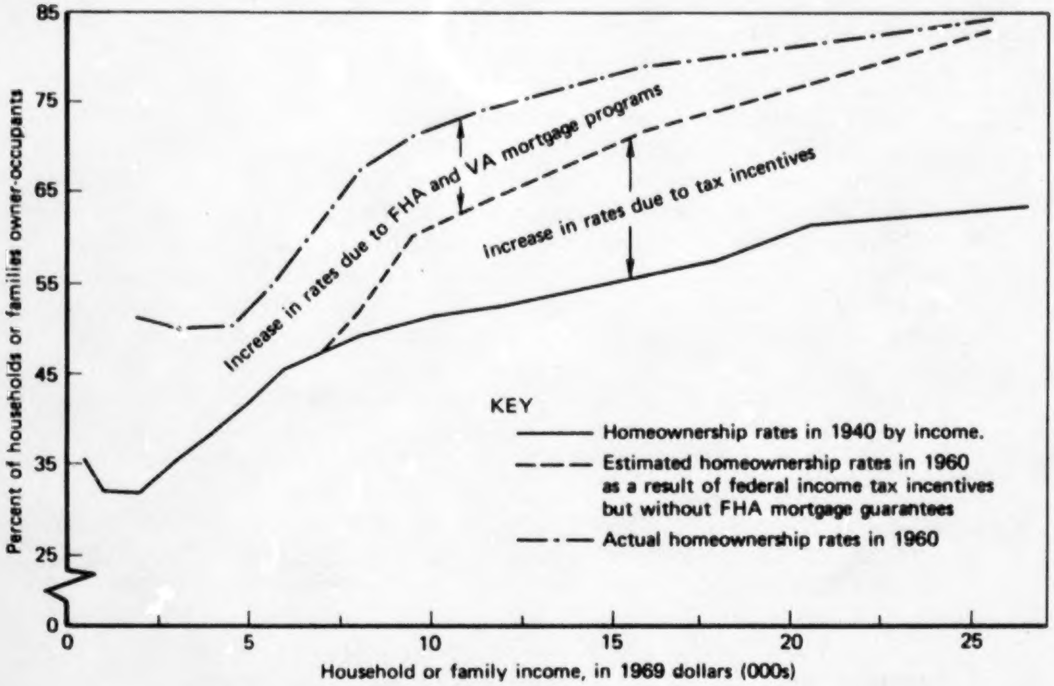
[1] This discussion draws heavily upon the work of Aaron (1972); James (1976); Peterson, James, and Reigeluth (forthcoming).

[2] Aaron (1972), Laidler (1969), and Shelton (1968) did similar studies, but James's study is the first to present some substantiation for all the parameters used in the estimation.

were effective) with estimates of the homeownership rates in 1960 in the absence of FHA and VA mortgage programs (in constant 1969 dollars). These are shown as solid and dashed curves in Fig. 10. Although tax incentives have a negligible effect on households earning less than $6,000 per year, they increase rates by 19 percentage points for households earning $25,000 per year.

As much as 1.7 million acres of suburban sprawl—or 12 percent of the increase in urbanized land since World War II—may be directly attributable to the federal income tax structure through its general subsidy of housing services consumption and through the built-in incentives to homeownership (Peterson, James, and Reigeluth, forthcoming). By comparison, expansion of the urbanized population accounted for a 42 percent increase, with the remainder attributable to rising incomes.

Depreciation allowances, the rate at which declines in the value of property may be offset against income, have favored suburban areas at the expense of central cities. New residential, commercial, or manufacturing structures can be depreciated for tax purposes at much faster rates than comparable investments in



SOURCE: Franklin J. James, "Income Taxes, Homeownership, and Urban Land Use," paper presented at Joint Session of the American Economic Association and the American Real Estate Association, Atlantic City, New Jersey, September 1976, p. 38.

Fig. 10—Homeownership rates by household income in 1940 and 1960 and estimated 1960 homeownership that would have prevailed in the absence of FHA/VA mortgage insurance programs

rehabilitation or maintenance (Peterson, 1977).[3] (Recent revisions of the tax code have largely offset this historical bias.) Land is not treated as a depreciable asset, which places a premium on selecting a location where land values are low but expected to grow.

Depreciation allowances have also affected the supply of rental housing. In the late 1960s, with the intention of encouraging investment in the rental housing stock concentrated in central cities, substantial tax breaks were granted to rental property tax owners. However, the implicit subsidies are greater the higher the income of the landlord, providing little incentive for local low income households to purchase rental property; according to one analysis, this led to a "disastrous combination of wealthy absentee owners and low income, largely minority, tenants" (Peterson, James and Reigeluth, forthcoming). The tax losses were largely artificial; tax depreciation does not reflect true depreciation. Landlords allowed the buildings to deteriorate with no expenditures on maintenance and repair.

Developers are allowed to establish municipal utility districts that can issue taxfree bonds to finance water, sewage, roads, and other infrastructure construction. Thus, costs that would otherwise be borne by developers or by residents through local taxes are shifted onto federal taxpayers through forgone tax revenue (Peterson, 1977), again subsidizing development at the expense of rehabilitation.

Mortgage Market Policies[4]

Several federal programs were initiated to assist middle and low income households. These programs have been predicated upon the belief that homeownership tends to stabilize or even improve deteriorating neighborhoods. A large number of federal programs provide (1) subsidized mortgage interest rates, (2) direct loans, and (3) guarantees and subsidies to provide mortgage lenders. It is difficult to separate the programs in these three categories because many contain specific allocations that fall into all three. Most programs have not helped the poor but have substantially increased the homeownership costs of middle income households by lowering monthly outlays, extending the amortization period, and reducing down payments.

The difference between the dashed curve (estimated rates without federal mortgage programs) and the dotted and dashed curve (actual rates) in Fig. 10 (above) estimates the increase in homeownership rates attributable to mortgage programs (James, 1976). Ownership rates of households earning between $5000 and $7500 a year (1969 dollars) were increased from an estimated 40 percent to an actual 55 percent. There was a negligible effect on households earning $25,000 or more a year or those earning less than $5,000. Most of the major programs have assisted the purchase of new units and have done little to facilitate homeownership in central cities, except in areas where substantial demolition and rebuilding have occurred. The overall effect of the programs has been to encourage decentralization and to stimulate residential development in new towns. The programs have failed to assist very low income households who have, therefore, remained in central cities.

Interest Rate Subsidies. Government National Mortgage Association

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[3] Newly constructed rental apartments may be depreciated according to a 200 percent declining balance, improvements to existing structures at only 125 percent.

[4] For a detailed description of relevant policies, see Congressional Budget Office (1976).

(GNMA) Tandem Plans, Farmer's Home Administration (FmHA) Interest Credit, and HUD's Section 235 Homeownership Programs provide loans with low market interest rates. GNMA has purchased $8.3 billion of mortgages at 1.5 percent below the market rate in an attempt to smooth out housing construction cycles. The program appears to have had little effect either on the level of construction or on the distribution of homeownership (Congressional Budget office, 1976; Utt, 1974). For fiscal 1976, the Section 235 plan, targeted specifically at low income families, had $42.5 million reserved to subsidize an estimated 50,000 units at an average subsidy of $850 per year to families with annual incomes around $10,000 for average mortgages of $23,000.

Mortgage subsidy programs have benefited suburban areas because they are applied almost exclusively to new units. Of units subsidized under Section 235, 90 percent were new and the remainder had been substantially rehabilitated.

Direct Loans. Nearly $68 billion in loans have been made by the Veterans Administration for the purchase of new homes, home improvements, and farm purchases. This program represents little if any subsidy as the rates charged are similar to market rates, and defaults are low. The emphasis on new structures has again worked against the central city.

Insurance Guarantees. The government provides numerous insurance and guarantee programs, which eliminate almost all risk of default to mortgage lenders. The Federal Housing Administration has 40 major insurance programs. Net budget outlays—$1.1 billion in 1975—have resulted from increasing defaults, particularly as subsidized in Sections 235, 266, and 221. There are $87 billion worth of outstanding mortgages insured under FHA and a further $28 billion under the VA.

Mortgage insurance programs have two effects: First, lenders have been able to reduce the risk or variance in expected returns; and second, an indirect information effect has encouraged private lenders to provide mortgages of higher loan-to-value ratios and lengthier repayment periods than those typical on loans before the FHA (MacRae and Struyk, 1977). The latter effect may have been minimal because of the presence of an active market in secondary mortgages before FHA, which, when combined with the market for first mortgages, provided loans with terms comparable to those available after FHA (James, 1977).

The majority of these mortgage assistance programs provide support mainly for new property, and assistance for the purchase of rehabilitation of existing housing is difficult to secure. Banfield (1968, p. 16) summarizes the results:

> FHA and VA programs have subsidized the movement of the white middle class out of the central city and older suburbs while . . . penalizing investment in rehabilitation of run-down neighborhoods of these older cities. The poor—especially the Negro poor—have not received any direct benefits from these programs.

Homeownership Programs for the Poor

Many of the mortgage programs described above have contained special provisions for facilitating homeownership for the poor (FHA Secs. 203(b), 213, 221(d) (2), 223(e), 234, 235, 236, and now Section 8). These programs have met with varying degrees of success.

Some of these homeownership programs may have contributed to the process of residential abandonment (Lilley and Clark, 1973). The abandonment of central city housing does not reflect a deterioration in the housing stock, but rather the greater availability of housing for lower income households and the rise in real income that allowed poorer households to abandon the least attractive units and move into more pleasant homes. During the 1930s and the war years, housing construction failed to keep pace with the growth of the number of households, resulting in crowding of existing units. Since World War II, the number of additional occupied housing units annually has rarely exceeded 75 percent of the number of newly built units, allowing reduced density in existing units and abandonment of undesirable units (Downs, 1977).[8] Some observers argue that the housing problem in urban America is not the adequate supply of housing but the high cost of maintaining that housing—72 percent of all tenants with income below $3000 a year and 54 percent of all renters earning less than $7000 a year spend more than 35 percent of their income on housing (Welfeld, 1977). Only 2 percent of those earning between $10,000 and $15,000 allocate such a high percentage of their income for housing. The result is a pattern of housing use that parallels "slash and burn" agricultural practices. Welfeld (1977, pp. 140–141) summarizes:

> The lack of income, however, leads inexorably to a housing problem. Standard housing may filter down, but if the poor cannot pay the amount necessary to cover basic expenses of ownership and operation, the housing then "filters out" through disinvestment and abandonment. . . . The lack of repair makes the unit ultimately uninhabitable.

The problem of abandonment has been particularly acute from houses sold in major cities under the combination of FHA Sections 221(d)(2) and 223(e), under which down payments were reduced, and the FHA insured the mortgages (Lilley and Clark, 1973). Abandonment of FHA underwritten property has contributed to the development of urban homesteading, by which property is sold at a token fee to a household agreeing to rehabilitate the property to federally defined standards. The program has met with some success (Hughes and Bleakly, 1975) but has not been in operation long enough to determine its long run effects on declining neighborhoods. Special homeownership programs have generally failed to help the very poor (Welfeld, 1977).

Rent Supplement Grants

Since 1965, the federal government makes rent supplement payments available to low income households. Under FHA Section 101, in 1975, 181,000 households received an average of $1000 each to make up the difference between 25 percent of household income and the fair market rent on their living unit.

FHA Section 8, enacted in 1974, pays eligible landlords a subsidy to make units available at low cost to poor families. Eligible families are those whose incomes do not exceed 80 percent of the area median household—a criterion that makes nearly 40 percent of households in the nation eligible for assistance (Welfeld, 1977). Appropriations in 1974, for FHA Section 8 and other public housing contract programs, were only $1.2 billion, which severely limits the number of households that actually do receive assistance. By tying eligibility to local median income, the program does attempt to take into account the local housing costs; however, there may be considerable local inequities. A household earning only $5000 per year in one community may not be eligible for assistance, whereas another household earning $8000 in an adjacent community may be eligible. The extent to which the program has encouraged the dispersal of the poor is unclear.

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[8] Between 1950 and 1973, there was a net increase in the number of units of 65 percent, compared with an increase in the number of households of 56.7 percent and in the population of 38.2 percent.

Public Housing

The Housing Act of 1937 required that, for every unit of public housing constructed, at least one existing unit of slum housing had to be destroyed. More units were demolished than built, and this regulation was reversed in 1969; for each unit destroyed, it was then required that a new public housing unit be constructed. Since World War II, an average of 40,000 units per year of public housing have been built or leased. By the end of 1975, over 1.3 million units were under annual contributions contract—three-fourths in metropolitan areas and three-fifths in central cities.[6] Annual expenditures on the construction of public housing declined from nearly $1 billion (in 1967 dollars) at the end of the 1960s to a little over $500 million in the mid-1970s. Before 1969, local housing authorities were required to cover operating expenses through rents and utility charges and to remit any surplus to the federal government. In 1948, 84 percent of federal outlays were offset through these remissions; by 1969, only 2 percent were offset. Many housing authorities required additional subsidies to cover operating expenses. These subsidies had to be increased in 1971 when Congress stipulated that rents should not exceed 25 percent of tenant income. In FY 1975, the U.S. Department of Housing and Urban Development contributed $1.3 billion to local housing authorities, about $1000 per dwelling, for debt service and operating expenses, a considerable subsidy per assisted family.

Subsidized housing serves a very small number of the poor. In 1972, HUD estimates all subsidized housing units (1.8 million) served only 6 percent of all poor households. Those occupying public housing have tended increasingly to be the very poor. Between 1960 and 1972, national median income rose by 90 percent, but the median income of those moving into public housing increased by only 21 percent. In 1960, only one-third of families moving into public housing were receiving welfare; by 1972 it was 71 percent (U.S. Department of Housing and Urban Development, 1974).

The concentration of public housing units in central cities, often in minority residential areas, may have contributed to the concentration of poor minority households in central cities. For example, in the city of Chicago, which is less than 30 percent black, 95 percent of public housing residents are black (Welfeld 1977).

Development Grants

The federal government makes funds available to local authorities for the construction of residential infrastructure that may reduce the private cost of residential development in the suburbs.

Sewage and Water Treatment Facilities. In 1972, Section 201 of the Amendments to the Federal Water Pollution Act authorized the expenditure of $18 billion for 75 percent funding of the construction of local treatment plants and interceptor sewers. At present, only $12 billion has been approved, obligated, or appropriated; and only $7.3 billion has actually been spent (Kirschten, 1977). The goal was to help municipalities meet secondary sewage treatment standards by 1977, a goal that will have to be extended. After highways, this is now the largest public works program. There are other related programs, including sewage system grants to local authorities and EDA grants. These programs are likely to have two effects: First, suburban sprawl will be encouraged. More than half the interceptor sewer construction in urban fringe areas has been put in vacant land for future population growth (Binkley, 1975). Second, cleaner water in lakes and streams may enhance their recreational use and lead to increased property values in adjacent residences. However, little is known concerning the residential effects of the water cleanup program, despite the massive expenditure by federal, state, and local governments and by private industry.

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[6] The data in this paragraph are from Lowry (1977).

Urban Redevelopment. Some infrastructure grants have been made available for the redevelopment of central city areas. It is unclear if they have been sufficiently large to outweigh the subsidy for new construction implicit in other grants. The federal government, under Title I of the Housing Act of 1949, has offered local governments financial aid to acquire blighted urban land, clear it, and resell it to private developers. By the end of 1975, HUD and its predecessor agencies had approved 2,102 projects entailing grant reservations of nearly $10.2 billion, and the Neighborhood Development Program had spent federal grants of 2.8 billion. These programs were mostly amalgamated into Community Development Block Grants, allocated among cities by formula.

Recipient municipalities have used these funds to tear down dilapidated housing and replace it with office buildings and highrises, usually at locations adjacent to downtown (Lowry, 1977). By the end of 1974, the grants had allowed local governments to purchase 80,000 acres, nearly half of which had been redeveloped (U.S. Department of Housing and Urban Development, 1976). More than 600,000 housing units had been destroyed and a little more than half as many completed, only 59,000 of which were low rent public housing. About 240,000 units in adjacent areas have been rehabilitated. The program has provided substantial assistance to cities in terms of higher property values and reduced central city densities.

When poor quality dwellings are demolished, the supply of such units is reduced, driving up their price. The few who are able to secure new housing in these projects benefit, but the rest face an increase in housing costs. As Muth (1969, p. 331) argues:

> Thus, although demolition probably leads to a long-run reduction in the proportion of poor quality dwellings, it lowers the average quality of poor quality dwellings. And, with a less than perfectly elastic long run relative supply curve, clearance makes the poor even poorer, relative to higher income groups, by raising the relative price of poor quality housing.

Housing Rehabilitation and Neighborhood Development. Federal grants have been made available for the improvement of public facilities in run down neighborhoods, spot clearance of dilapidated structures, and for acquiring, rehabilitating, and reselling dwellings. Between 1954 and 1973, HUD made 58,000 rehabilitation grants totalling $169 million and approved low interest loans on 67,000 owner-occupied dwellings with a total principal of $295 million. Between 1966 and

1973, federal grants of $350 million were approved for 258 local code enforcement programs, bringing perhaps 250,000 buildings up to code (Lowry, 1977). The effect of the rehabilitation subsidies seems to have been temporary; many of the loans ended in foreclosure (McFarland, 1977).

Other Federal Grants. Other federal construction grant programs may have influenced urban decentralization. Rural communities have been eligible for a number of special grants that have reduced the cost of housing in nonmetropolitan areas. For example, loans are available to Rural Electric Cooperatives at 2 percent, instead of about 6 percent from nonfederal sources. In 1976, there were loans of $5 billion outstanding, representing an annual subsidy of $200 million. There are subsidized loans available for rural telephone services and also grants for waste and water disposal systems for rural communities. Although these programs do not appear to have played a major role, the recent resurgence of growth in nonmetropolitan areas may be facilitated by the reductions in infrastructure construction cost that these programs allow.

Regulation of Building and Housing Codes

It is illegal both to build new, low quality housing units and to allow existing units to deteriorate below a certain quality level. Although these laws are state and local regulations, the widespread reliance on federally guaranteed mortgages, which are allowed only if the structure meets federally defined standards, has meant that the federal government has played an extensive role in encouraging enforcement. FHA and VA program emphasis on new rather than existing structures has resulted in the rigorous enforcement of building codes. Building codes have led to a small increase in *costs* of housing construction (Muth and Wetzler, 1976, but they have significantly affected the *types* of houses constructed (Muth, 1969), by preventing the construction of new, low cost, low quality housing for the poor. However, housing codes that apply to existing structures have been less rigorously enforced, especially in older parts of the city. These practices, it has been argued, have accentuated the concentration of low income households in the urban core by pricing them out of suburban areas where new, single-family housing predominates (Muth, 1969; Downs, 1977). There is no evidence of the strength of the effect, but it probably has accentuated the selective suburbanization of higher income households and has allowed suburbs to exclude lower income families.

THE EFFECTS OF FEDERAL POLICIES ON ACCESSIBILITY

Federal policies related to commuter transportation have allowed the metropolitan area to extend its boundaries. The most important of these have been radial highways and mass transportation programs. Energy and environmental programs may, in the future, also shape patterns of urban residential location. Federal involvement in transportation is complex, involving both commuter and freight transportation. The business sector and the residential sector must compete for available road space. The system is dynamic because residential location and business location affect the need for transportation services, which, in turn, influence emerging location patterns (Fig. 11).

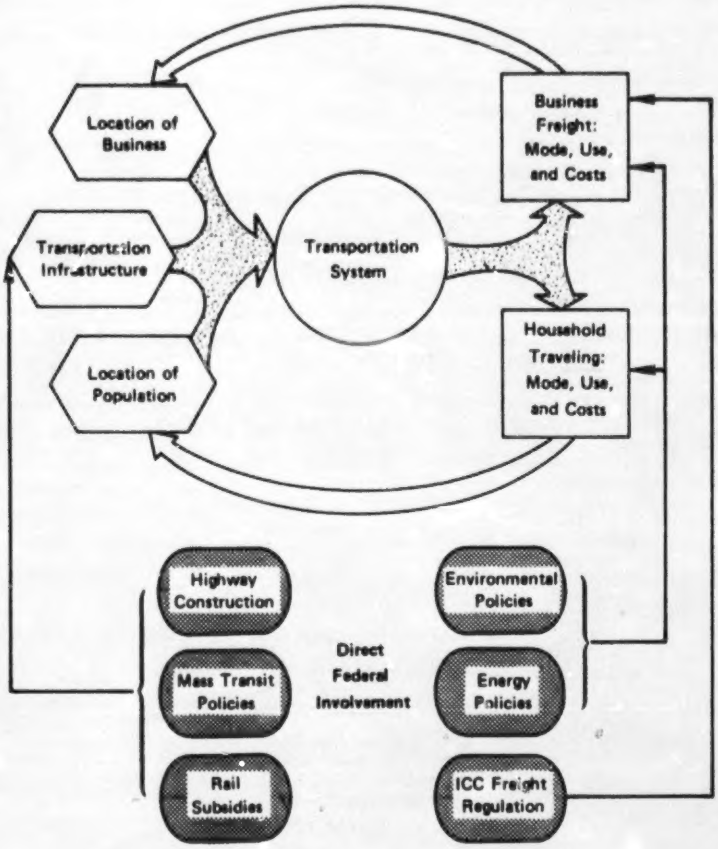
Location of Business
Transportation Infrastructure
Location of Population
Transportation System
Business Freight: Mode, Use, and Costs
Household Traveling: Mode, Use, and Costs
Highway Construction
Mass Transit Policies
Rail Subsidies
Direct Federal Involvement
Environmental Policies
Energy Policies
ICC Freight Regulation

Fig. 11—Transportation, business and residential location, and federal policies

Highways

The extensive federal commitment to the construction of highways has greatly reduced the cost of automobile commuting. There are 8,800 miles of urban highways in the 42,500 mile interstate system. The federal share of total cost has been 90 percent. In addition, federal aid has been given for 39,000 miles of urban extensions of state and secondary highways (Owen, 1976). The extent of the effect varies greatly from city to city depending upon the design of the highways and the degree to which federal rather than local funds were used. The percentage reduction in commuting costs brought about by a radial highway, rather than an arterial road, is greater the further from the city a commuter lives.

The use of highways is subsidized because road users are not required to pay the full cost of road use. During rush hours, the cost of road use reflects the additional congestion attributable to an extra road user. The fact that users do not pay this cost has resulted in excessive highway use and has encouraged people to live further from their workplace than they would if an appropriate user-charge were levied. Boyd, Asher, and Wetzler (1973, p. 37) summarize:

> Present auto road-user charges, consisting primarily of gasoline taxes, are less than $.015 per mile. This is far below the real cost of using the road in both peak ($.29) and base ($.07) periods. . . . Peak hour private auto travel is heavily subsidized. Charges sufficient to cover the true costs of auto travel in urban areas would surely cause a major restructuring of travel behavior and urban form.

Failure to use roads efficiently has placed older and more densely populated cities at a disadvantage relative to new cities whose highway networks reflect the importance of the automobile.

It is difficult to determine the role of the federal government in encouraging the use of the automobile. Rising incomes alone probably explain a large share of the increase. However, without the highway system, expansion of ownership would have been slower.

Mass Transit[7]

Federal involvement in intraurban mass transit has grown considerably within the last decade. Transit ridership reached a peak of 19 billion revenue passengers during World War II as a result of gasoline rationing, and then declined to 5.6 billion in 1974 (Owen, 1976). As the automobile became the predominant urban passenger mode, many private transit companies went out of business and local public companies experienced rising deficits (Hilton, 1974). In 1970, 70 percent of all employed people living in the central city of a metropolitan area went to work by automobile; 20 percent used mass transit (the remainder walked, worked at home, or used some other method of travel). Mass transit is used mainly in older, larger metropolitan areas. Fourteen metropolitan areas account for 70 percent of all transit riders (Owen, 1976).[8] New York City, where 61 percent of the population use public transportation for commuting, accounts for 38 percent of the nation's transit riders. Mass transit policies affect only a few large cities.

The Urban Mass Transportation Act of 1964, which represented the first major federal commitment to mass transit, established the basic authority for federal assistance to mass transportation and is administered by the Urban Mass Transportation Administration (UMTA). UMTA undertakes three types of activities: (1) large-scale capital grants to local authorities, (2) release of highway money to local authorities for mass transit, and (3) provision of operating grants under Section 5.

The capital grants program, with a budget authority of $7.1 billion over a six-year period, pays 80 percent of the costs of bus purchases, rail modernization, and the construction of new transit systems, the remainder being paid by state and local authorities. About 30 percent of the capital grant funds is budgeted for buses, and the remaining 70 percent is split evenly between completely new rail systems (in Atlanta, Baltimore, Buffalo, Miami, and San Francisco) and improvements and extensions to existing rail networks. The matching ratio of transit capital grants is less favorable to states and localities than the 90 percent share of highway costs paid by the federal government.

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[7] This summary is based upon a review of federal transit policies prepared by the Congressional Budget Office (1977b).

[8] The following cities plus their surrounding metropolitan regions: Baltimore, Boston, Chicago, Cincinnati, Cleveland, Detroit, Los Angeles, Minneapolis, New York, Philadelphia, Pittsburgh, San Francisco, St. Louis, and Washington.

UMTA has made available $800 million of federal highway money to fund mass transit at local option. Use of these funds for transit has been minimal—never more than 5 percent of that available—perhaps because poor quality local highways have absorbed the funds, because small capital grants may be easily obtained from UMTA (Congressional Budget office 1977), or because the highway lobby has considerable influence.

The UMTA Section 5 program allocates funds to urban areas of different sizes. Although the funds could be used for either operating or capital costs, more than 90 percent has been spent to meet operating costs. The allocation formula distributes half in proportion to urban area population and half in proportion to population weighted by density. There are considerable variations among groups of urban areas in the extent of the operating subsidy, as the data presented in Table 30 show. Smaller urbanized areas tend to receive a much larger subsidy per unit of service, measured as per rider or per passenger mile, than larger areas.

The effects of these transportation subsidies on suburbanization depend upon the degree to which capital and operating grants are reflected in reduced fares and improved services. The response of automobile riders to changes in public transportation fares seems very low (Kraft, 1973). It is unlikely that mass transit subsidies have a significantly reduced automobile traffic congestion. By maintaining service along routes that otherwise would have been abandoned, subsidies may have allowed families without automobiles to live further from the city center or further from their place of work.

Table 30

ALLOCATION OF SECTION 5 FUNDS PER RIDER AND PASSENGER MILE, BY SIZE OF URBAN AREA, FY1975 AND 1976

(dollars)

Urban Area Population[a]	Per Revenue Rider	Per Passenger Mile
1 million +	.06	.18
500,000-1 million	.15	.34
200,000-500,000	.16	.36
50,000-200,000	.25[b]	.43[b]

SOURCE: UMTA, *Transit Operating Performance and the Impact of the Section 5 Program*, U.S. Department of Transportation, Washington, D.C., November 1976, pp. 33-34.

[a] Based upon a sample of urban areas within each size class receiving funds.

[b] Because allocations are not made directly to urban areas with populations less than 200,000, these shares are derived by applying factor weights to the governors' apportionments.

Transportation Related Energy Policies

Transportation accounted for one-quarter of the energy consumed in the United States in 1970—16.5 quadrillion Btus. Of this total, more than half was used by automobiles, and most of this was for intracity driving. Automobiles were responsible for 97 percent of the urban passenger miles traveled in 1970 and for 99 percent of the energy used transporting urban passengers. The automobile consumed 8100 Btus per passenger mile in 1970—a 6.5 percent increase over the corresponding consumption in 1950. Buses consumed only 3700 Btus per passenger mile in 1970, and subways averaged 4100 Btus per passenger mile (Hirst, 1973).

In view of the potential changes in the availability and the real price of energy in the future, the relationships among energy, transportation, and residential location are important. In the past, real energy prices have shown a tendency to decline steadily. To what extent will increases in fuel costs lead to a recentralization of population?

Although there are no firm answers to this question, an examination of relevant information yields some tentative conclusions. First, energy costs are only a small fraction of automobile commuting costs. A doubling of energy prices raise commuting costs by only about a third, even if the commuter takes action to offset the increased fuel cost.[9] If the commuter buys an automobile with higher gas mileage, or shares a ride with a friend, then the increase will be less.

Inasmuch as energy costs do affect individual transportation costs, the influences on residential location will have a number of qualitative aspects: First, because of the importance of time costs and the relationship between wage rates and time costs, an increase in gasoline prices will raise the travel costs of lower income commuters by a higher percentage than the costs of higher income commuters. If all income groups exhibit the same *elasticity* of residential location with respect to commuting costs, then there will be a greater tendency for lower income households to relocate closer [illegible] their workplace.

Second, because average commuting speed declines with SMSA size, the time-cost component of total commuting costs is larger, the larger is the SMSA. Energy price increases will therefore represent a small percentage increase in commuting costs in very large SMSAs so that the tendency toward recentralizati [illegible] less.

Third, increased commuting costs may encourage some firms to move out to suburban locations where they can offer workers lower wages in return for the reduced commuting costs. Finally, in those areas where mass transit services are offered, there may be a tendency toward increased mass transit use and a concomitant recentralization of population into those areas served by the mass transit system. These effects are likely to be weak.

Transportation and Environmental Regulation

The Environmental Protection Agency, as required by the Clean Air Amendment of 1970, has required automobile manufacturers to reduce emissions of hydrocarbons, carbon monoxide, and nitrogen oxide. These regulations have increased the price of new automobiles by about $300 (Environmental Protection Agency, 1974b). Although compliance with federal standards reduced gasoline mileage in automobile models in early 1970s, increased use of catalytic converters may offer fuel economies that offset the increased purchase price. It is unlikely that the cost increases generated by environmental controls have had any significant effect on location, although the controls have affected air quality.

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[9] In the 12 largest SMSAs, heads of households spent an average of one hour a day commuting for a round trip distance of approximately 20 miles (Morgan et al., 1966). The trip consumed approximately 1.5 gallons of gasoline. If we assume that there is only one rider per vehicle, then the gasoline cost is approximately 5¢ a mile; and total automobile travel cost, including time, depreciation, and maintenance is approximately 14¢ a mile for a commuter with a wage of $3.87 an hour (Dewees, 1976).

Other environmental strategies may affect commuting costs. EPA has divided the nation into 247 Air Quality Control Regions (AQCRs), and each is required to develop pollution control strategies that reduce the concentration of pollutants below federally set levels. A total of 66 AQCRs, representing 60 percent of the nation's population, exceeds standards for one or more pollutants (Environmental Protection Agency, 1974b). Some areas will be able to meet these standards with no local action at all; the mandated reduction in vehicle emissions will suffice. Other areas (mostly large cities) will have to reduce vehicle miles traveled to meet standards. Strategies such as a high tax on downtown parking or a considerable increase in public transportation may have a significant effect in reducing decentralization. Residential densities along routes served by mass transit may be expected to increase, and densities in areas not served will correspondingly decline.

The Effects of Federal Policies on Employment Suburbanization[10]

The more rapid growth of employment in the suburbs than in the central city has been assisted by some of the policies that have aided regional deconcentration. Again, the locational bias has arisen from the tendency to assist new growth and development at the expense of rehabilitation and repair.

Federal grants have been available for sewering vacant land and constructing industrial parks and access roads. As with population suburbanization, building highways has proved influential. Many firms have chosen sites with easy freeway access, and trucking has replaced rail as the major carrier of freight. The business tax structure has also implicitly subsidized suburbanization. For example, land may not be treated as a depreciable asset in the computation of tax liabilities, which encourages firms to locate where land is low priced but expected to increase in value. A similar bias is contained in the favorable treatment of capital gains relative to business income, which has led some firms to purchase large suburban sites for speculative purposes.

Finally, regulatory activities have not favored central cities. For example, freight rate and route regulation has assisted trucking, usually at the expense of rail. It is unclear how much occupational safety and health regulations and pollution abatement measures will influence the location of industry, but there is some evidence that it will be more costly to modify older equipment than new equipment to comply.

THE EFFECTS OF FEDERAL POLICIES ON AMENITIES

Although the quality of the residential environment may play a role in the success or failure of a central city in attracting residents, very little is known about the relative importance of these factors in the suburbanization of population or how important federal policies have been in affecting their level or distribution. There are many possible avenues of federal influence on the amenities discussed in Sec. VII. Major avenues of federal influence are outlined in Table 31.

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[10] This subsection summarizes some of the findings of the *Economic Development* report.

The major federal commitment to amenities, in terms of budget expenditure and perhaps also in terms of influence on residential location, has been in the area of air and water pollution. Federal involvement began with the Water Pollution Control Act in 1948 and has grown rapidly since then. Some actions have also been taken by state and local authorities, although these local actions have usually been mandated by federal law.

Table 31

DIRECT FEDERAL INVOLVEMENT IN AMENITIES

Amenity	Direct Federal Involvement
Noise	Environmental policies
Air quality	Mass transit programs
	Highway construction and design
	Energy policies
Recreational open space	National Park Service
	National Forest Services
	Grants for construction of recreation facilities
Public safety	Grants for law enforcement
	Federal judiciary
	Penal system
	Policies affecting income redistribution
	Policies affecting racial integration
	Policies affecting unemployment
Diversity	National Endowment for the Arts
	Income tax structure

Air Quality[11]

Federal standards and local enforcement actions have had a pronounced effect on air quality. For example, in 1970, New York City experienced nearly 50 days during which the primary 24-hour standard for sulphur dioxide (SO_2) was violated. In 1974, there were no such days. Chicago experienced a similar abatement in violation days of total suspended particulates (TSP). In Birmingham, Alabama, the number of days in violation of the TSP standard fell from 190 to less than 50.

There have been lesser reductions in levels of carbon monoxide (CO), a pollutant due almost entirely to automobiles. As the pre-1975 component of the motor vehicle fleet diminishes, so will the level of CO; and most AQCRs should be able to comply with federal standards by the mid-1980s. Nitrogen dioxide (NO_2) has increased since 1970, the only pollutant to do so, partly because of the devices used to control hydrocarbons and CO.

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[11] The data in this subsection are from the Council on Environment Quality Annual Reports, Washington, D.C., various years.

Federal policies have contributed to a significant and continuing reduction in pollutants, which has enhanced the quality of the urban environment and had the greatest effects in larger cities where initial pollution levels were highest. In fact, nonmetropolitan residents are compelled to pay the cost of automobile emission reducing devices even though there is little need for them in rural areas. (Croke and Zerbe, n.d.).

Water Quality

The 1972 amendments to the Federal Water Pollution Control Act, in an effort to restore the biological integrity of the nation's waters, have established the interim goal providing "for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water . . . by July 1, 1983" (P.L. 92-500, 86 Stat.816). Stringent controls on many industrial and municipal point source discharges have been introduced, but little has been done to control nonpoint sources, especially surface runoff.

There is little evidence as to the effect that the improvement in urban waterways and lakes will have on patterns of residential location. However, the considerable public expenditures on water treatment facilities are concentrated in growth areas and may stimulate residential and commercial development.

Federal policies to secure a cleaner environment are likely to have a significant effect on urban population growth. For any given city, that effect will depend upon the initial levels of pollution, the pollution sources, and the manner in which the required abatement is achieved. Although households are deterred by dirty air, rapid population growth tends to raise pollution levels. Denver, once attractive because of its Rocky Mountain air, is now often screened behind a pall of automobile produced pollutants as concentrated as those in Chicago or Cleveland.

To the extent that pollution is controlled through nationwide standards, or where the costs are borne by the federal government, cities currently suffering from severe pollution as a result of automobile travel will experience a reduction in pollution levels and may increase their population growth rate. Less polluted cities, with less to gain, will find the flow of inmigration reduced, reflecting a loss in this aspect of their comparative advantage.

Where the pollution has arisen from stationary sources—power plants and factories—the outcome is less clear cut. The abatement costs are met, wholly or in part, by the emitter. This may drive costs up sufficiently to reduce the firm's competitiveness, leading to a reduction in employment and population decline. The severity of the effect will depend upon the extent to which increased capital and operating costs are offset by reductions in wages as workers require less financial inducement to suffer the pollution.

Public Safety

The federal government may influence crime rates in several ways: First, increasing the efficiency of law enforcement activities may act as a deterrent. Second, through rehabilitation programs, the criminal population may be reduced. Third, the penal system may be enhanced by more efficient use of prison and other deter-rents. Finally, the crime rate may be indirectly affected by federally induced changes in social and economic conditions that appear to lead to crime.

Little is known about the relationship between crime and the effectiveness of law enforcement, the severity of punishment, rehabilitation programs, and underlying economic conditions. Even less is known about the relationship between the effectiveness of law enforcement and improved equipment, police training, and increased staffing. The Law Enforcement Assistance Administration, first funded in 1968, has provided more than $7 billion in financial assistance to state and local police forces. Grants currently cover about 5 percent of local government criminal justice costs. LEAA has also funded considerable data collection and research efforts that may increase the productivity of law enforcement. It is difficult to determine what effect these programs have had. LEAA has undertaken to combat drug traffic and did reduce the flow of narcotics into the United States. This reduction has two countervailing effects on crime. The price of drugs will be driven up, increasing the crime rate among addicts who are still able to purchase drugs; and the criminal activity among those who can no longer secure supplies may decline. The greater the shortage induced by federal activities, the more likely it is that the second effect prevails.

Other federal activities that may influence crime rates include the Federal Bureau of Investigation and research by the Judiciary on correctional practices and rehabilitation programs. There is no evidence concerning the urban effects of these activities.

The federal government may influence crime indirectly. Improvements in the equity of the distribution of income, lowering the rate of unemployment, and reductions in the incidence of poverty may reduce the crime rate. However, the concentration of the poor in central cities may increase it. Vocational training programs and programs designed to provide public sector jobs for the chronically unemployed may also mitigate the tendency toward crime. These relationships are poorly understood and merit further research. The unexpected reduction in reported crime rates in central cities in both 1975 and 1976 in spite of soaring unemployment should be studied for a more detailed understanding of the determinants of crime.

Recreational Open Space

In addition to the development and administration of the National Park and Forest Systems, federal involvement has been through the provision of grants to local authorities for the acquisition of open space and the construction of recreational facilities. Public works funds provided by the Economic Development Administration, Model Cities funds, Urban Redevelopment grants, and Community Development Block grants have been used for these purposes. The federal role is too small to have had any more than a very local effect.

Urban Diversity

Cultural diversity in cities has been aided by grants to nonprofit institutions made by the National Endowment for the Arts (NEA) and the National Endowment for the Humanities. The two agencies spent nearly $170 million in 1976. These expenditures have helped organizations in the fields of architecture and environmental arts, crafts, dance, education, folk arts, literature, museums, public media, theater, and the visual arts. These institutions tend to be located in central cities and have helped enhance their diversity. The level of expenditure is small, however, and the role of these institutions in encouraging people to spend their leisure hours or even to live downtown is uncertain.

Diversity in restaurants and entertainment is also encouraged by tax provisions that allow dining and entertainment to be treated as business expenses. Alonso (1972, p. 645) concludes:

> Although no studies appear to exist on the subject, this practice clearly underlies much of the glamour and the economy of certain metropolitan centers. Manhattan would not be the same without it, nor any other major metropolitan center. It may be presumed that, were these laws tightened, our socioeconomic landscape would be grayer but more dispersed.

THE EFFECTS OF FEDERAL POLICIES ON THE LOCAL PUBLIC SECTOR[12]

The principal avenues through which federal actions influence the local public sector include changes in:

1. The level, composition, or distribution of federal grants to state and local governments,
2. The revenue subsidies to local governments (and states) by provisions of the federal income tax, and
3. Policies that affect the scope of local responsibilities for providing or financing public services.

Federal Grant Programs

In 1975, 15 percent of the federal budget, $60 billion, was expended as intergovernmental aid and constituted 23 percent of total state-local revenue. Nearly half of the intergovernmental grants to local governments was for local public schools, flowing to independent local school districts rather than to cities. Welfare and highways also received substantial support. The effect of this aid on a locality depends on the volume of aid and also upon the response of the state and local governments to federal grants, the expenditure obligations that localities incur when they accept federal or state aid, the treatment of urban areas under federal and state aid distribution formulas, and the long run locational effects of grant programs.

The Form of Aid. The effect of a given volume of aid on local fiscal opportunities depends on the form in which aid is provided—categorical grants, block grants, or unrestricted aid; or lump-sum or matching grants. These different grant forms impose different expenditure obligations on the local aid recipient. To the extent that categorical earmarking is effective, grantees must spend more for the aided functions than they would otherwise. Funds received under categorical and matching grants are less substitutable for local revenue than is unrestricted lump-sum aid and, therefore, contribute less than their face value to the net fiscal opportunities of the local sector.

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[12] This subsection summarizes some of the findings of the *Fiscal Conditions* report.

Aid Distribution. Fiscal conditions in cities relative to suburbs and in urbanized relative to less urbanized regions depend on how aid funds are distributed among states and localities. Urban areas tend to do worse with broad allocation criteria (such as population or per capita income) used for revenue sharing, and many capital construction grants, than with narrower measures representing service needs and costs or concentrations of problems (used for Aid to Families with Dependent Children, CETA, and Title I education funds). Recent fiscal distress has led to the chanelling of federal aid to cities that have suffered from high unemployment, an aging housing stock, and population loss. Direct aid to large cities has risen from 3 percent of local own source revenue in 1967 to 28 percent in 1976. Recent expansion of aid—countercyclical revenue sharing, CETA, and local public works—will raise direct federal aid to major central cities to approximately 5 percent of their own source revenues in FY 1978 (Table 32). Cities scoring high on an urban conditions index,[13] a measure of need, have received a large increase in aid, and those scoring low have received a lesser increase. Per capita federal aid in FY 1978 for the five cities with the highest "need" is estimated to be $258, and aid to those cities with the lowest need index is estimated at only $100.

Although federal and state financial aid to the cities has escalated even more sharply than the local share in recent years, federal and state contributions have not offset the financial burden in absolute terms on the cities. Campbell and Sacks (1967) argue that federal and state aid have on occasion augumented the inequity. They pointed out that, in the nation's 37 largest SMSAs between 1964 and 1965,

> locally-financed education outlays were $14.19 per capita higher in the suburbs; the inclusion of federal and state aid increased this difference to $24.82. The converse was true for noneducational outlays, which include heavily aided welfare, highway, and urban development programs.

Federal Tax Expenditures

The federal tax expenditures that arise from the deductibility of state and local taxes and the tax-exempt status from municipal bond interest provide revenue subsidies to the state-local public sector. These subsidies permit localities to collect taxes without imposing their full cost on local taxpayers. The effect is similar to that of an open-ended matching grant to the state-local sector. In FY 1977, tax expenditures for local governments were estimated at $16.2 billion. However, only a fraction of the federal tax expenditure translates into additional state or local revenue; the rest provides benefits to individual taxpayers. The distribution of these tax expenditures is sharply skewed toward high-income taxpayers, and the benefits accrue to the jurisdictions and regions in which they live.

Federally Imposed Service Obligations and Costs

Federal legislation or regulatory activities have imposed spending obligations

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[13] The urban conditions index is that developed by Nathan and Adams (1977). It includes measures of the rate of unemployment, the percent of the population that is dependent, the average educational attainment, per capita income, crowded housing, and the incidence of poverty. The extent that these measures really reflect the degree of distress of a city is, of course, subject to debate.

Table 32

DIRECT FEDERAL AID AS A PERCENT OF OWN SOURCE GENERAL REVENUE, SELECTED CITIES AND FISCAL YEARS, 1957-1978

City	Nathan's Urban Conditions Index[a]	Fiscal Years				Per Capita Federal Aid[a]	
		1957	1967	1976	1978 Est.	1976	1978 Est.
St. Louis	351	0.6	1.0	23.6	54.7	$ 86	$223
Newark	321	0.2	1.7	11.4	55.2	47	251
Buffalo	292	1.3	2.1	55.6	69.2	163	218
Cleveland	291	2.0	8.3	22.8	68.8	65	217
Boston	257	(b)	10.0	31.5	28.0	204	203
Unweighted averages	302	0.8	4.6	29.0	55.2	222	
Baltimore	226	1.7	3.8	38.9	53.3	167	258
Philadelphia	216	0.4	8.8	37.7	51.8	129	196
Detroit	201	1.3	13.1	50.2	69.6	161	248
Chicago	201	1.4	10.9	19.2[c]	38.7	47	107
Atlanta	118	4.3	2.0	15.1	36.0	52	150
Unweighted averages	192	1.8	7.7	32.2	49.9	111	192
Denver	106	0.6	1.2	21.2	24.2	98	140
Los Angeles	74	0.7	0.7	19.3	35.7	54	120
Dallas	39	0	(b)	20.0	17.8	51	54
Houston	37	0.2	3.1	19.4	22.7	44	68
Phoenix	20	1.1	10.6	35.0	58.3	57	116
Unweighted averages	55	0.5	3.1	23.0	31.7	61	100
15 cities	183	1.1	5.2	28.1	45.6	95	171

SOURCE: Advisory Commission on Intergovernmental Relations staff computations based on U.S. Bureau of the Census, *City Government Finances in 1957, 1967, and 1976*. Estimated city own source general revenue for 1978 based on annual average increase between 1971 and 1976. Direct federal grants to each city for fiscal 1978 based on (1) ACIR staff estimates of the federal stimulus programs for 1978 and (2) Nathan's estimates for all other federal aid in fiscal 1978 as set forth in his testimony before the Joint Committee on July 28, 1977.

[a] Based on 1975 population.

[b] Less than 0.5 percent.

[c] Percentage based on federal aid excluding general revenue sharing. Funds withheld pending judicial determination.

on local (or state) governments or generated higher costs in several fields. Notable examples are in environmental protection, where federal aid for facilities construction pays only part of the cost of meeting air and water standards; treatment of the handicapped, where Congress and the courts have established rights to service without providing aid to defray the increased costs; and desegregation, where the federal government has attempted to ensure that race should not be a barrier to housing, employment, or education. Discrimination in any field on grounds of race or sex is illegal under the Civil Rights laws of 1964 and under the proposed Equal Rights Amendment. The influence of such policies and their enforcement through anti-discrimination suits and affirmative action programs is unclear. There is no evidence that firms have left areas with high concentrations of minorities, or of significant changes in the quality, price, or availability of housing. In one area—education—there is evidence that anti-discriminatory federal policies have exerted an influence: It has been argued that desegregation of schools has led to the withdrawal of white families to suburban school districts.[14] The policy, it is alleged, defeats itself by encouraging residential segregation.

Beginning with its historic *Brown v. Board of Education* decision in 1954 declaring that school segregation was unconstitutional, the U.S. Supreme Court has subsequently handed down decisions challenging both *de jure* and *de facto* segregation under less and less restricted conditions.[15] In 1968, the Court declared inadequate desegregation plans that gave students freedom in choosing which school to attend and, in 1971, determined that desegregation plans could legally require busing. In 1972, the Supreme Court moved beyond *de jure* segregation to decide that where "intentional state action" had increased *de facto* segregation, public schools could be compelled to desegregate.[16] These policies have been vociferously opposed by whites in many areas. In Atlanta, following desegregation, white enrollment declined 60 percent between 1968 and 1973; and in the Boston system, white public enrollment dropped 37 percent between 1974 and 1976 after court-ordered busing was initiated (Clotfelter, 1976).

Central city schools have clearly grown increasingly black in recent years. This has been attributable both to the residential relocation of whites and to the enrollment of children in private schools. However, establishing a causal linkage between these outcomes and school desegregation is difficult because some "white flight" would have occurred in the absence of deliberate school desegregation as a result of other forces.

Several empirical efforts have been made to assess the effects of desegregation on racial patterns of residential settlement but with mixed results. Some authors have demonstrated that desegregation is systematically associated with a reduction in the proportion of white students in desegregated central city school districts, declining property values, and decreases in the white school age population residing in those areas (Coleman et al., 1966; Clotfelter, 1975a, 1975b). These findings are contested by Farley (1975) and Rossell (1976) who found no evidence that school desegregation was associated with shifts in the proportion of white pupils in desegregated school districts. However, some of this conflict in the available evidence may be due to methodological flaws in some of the research itself.

Several of the studies mentioned above contain serious methodological problems (Armor, 1978). For example, Coleman et al. (1966) have been criticized on several counts. First, they use segregation as their independent variable although exposure of white children to blacks may be the more relevant problem. Second, their model ignores other factors that could also account for some accelerated departure of whites from desegregated schools, such as income and relocation of employment opportunities. Third, several cities undertook substantial annexations during the period under study and their racial effects are not accounted for. Finally, Coleman et al. use white public school enrollment as the dependent variable but make no attempt to distinguish transfers to private schools from residential mobility as contributors to this outcome.

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[14] The underlying assumption is that households may respond to school desegregation in a manner suggested by the Tiebout type of model discussed in Sec. VII. Specifically, the racial composition of a school may be valued as an end in itself or it may be perceived to change the level of educational services offered. Clotfelter (1976) notes that several authors have examined the effects of classroom composition on achievement including Coleman et al. (1966), Averch et al. (1972), Summers and Wolfe (1974), and Armor (1978). However, their findings are somewhat mixed and the actual effects of desegregation on level of educational services offered remains somewhat uncertain.

[15] This subsection rests heavily on the excellent summary by Clotfelter (1977).

[16] In the first of these studies, Clotfelter (1975a) argues that if desegregation is associated with white flight, demand for housing in desegregated school districts should diminish and housing prices should fall, a hypothesis confirmed by his analysis. In the second study, Clotfelter (1975b) posits that if desegregation generates residential mobility, households with school age children will tend to move in disproportionate numbers because they will be most affected by the change—also borne out by empirical analysis.

Farley (1975) and Rossell (1976) similarly focus on segregation rather than exposure and fail to account for the effect of transfers to private schools on white enrollment. In addition, Farley omits many important variables from his estimating equation. Rossell uses a dependent variable that is sensitive to growth in the size of the black student population as well as diminution of white enrollment, making it impossible to interpret any result as necessarily indicating departure of whites.

The advantage of the Clotfelter (1975a and 1975b) studies on the interdistrict locational effects of school desegregation is that they concentrate on locational outcomes—housing prices in districts where schools have been desegregated and shifts in the proportion of white families with children in those same districts. Thus, what appears to be the stronger evidence on this question argues that some white flight will be likely to occur when schools are desegregated. One recent study concluded that the effect is large and that "the amount of desegregation—defined as minority exposure to whites—is declining, and for some districts has fallen below the pre-desegration level" (Armor, 1978, p. iii).

One predominant criticism of recent federal school desegregation policies is that their application exclusively to central city schools has accelerated both the suburbanization of whites seeking nonintegrated school districts and the growing concentration of blacks in center cities. The previously mentioned research all considers the effects of desegregation on white public school enrollments and on the distribution of white households across central city and metropolitan school districts of varied racial mixes. However, Clotfelter (1976) specifically concentrates on the effect that restriction of desegregation plans to central city school systems has had on the suburbanization of white households. He found no significant effects of central city school desegregation on rates of white suburbanization.

Several studies have found that school desegregation, particularly if achieved through busing, does lead to a sharp reduction in the number of white children in school in the desegregated school district. This results both from the transfer to private segregated schools and from white flight. The first phenomenon is probably less serious. There is a drift back into the public school system from white private schools the first few years after desegregation. This may arise because of the financial burden of private schooling or as the turmoil accompanying desegregation dies down. The white flight issue is more serious. Desegregation may do no more than advance the date at which white households move to the suburbs. This is unlikely; if an action increases the attractiveness of an alternative, it will affect more than the speed with which households take that alternative. White flight from desegregation may be a significant and undesirable outcome of a federal policy. It will undoubtedly receive attention in the future.

SUMMARY

Central cities have lost population and suburbs have gained through a number of underlying changes including rising incomes and the increased use of the automobile. The process has been significantly accelerated by federal housing and transportation programs. Federal policies have also contributed to the growing concentration of minorities and the disadvantaged in the central cities.

The federal income tax structure has encouraged homeownership by allowing the tax deduction of interest and local tax payments, a policy that has helped only those in higher income brackets. The tax structure has subsidized new construction at the expense of maintenance and rehabilitation. Most mortgage subsidy and guarantee programs, instituted to help low income families own homes, have favored new housing, a bias that has encouraged families that meet program requirements to move to the suburbs, leaving poorer families behind. Some of those programs targeted toward the inner city poor have met with limited success and may have contributed to abandonment and neighborhood deterioration in some areas.

Public housing programs, which have increasingly sheltered the very poor, have probably contributed to the piling up of the poor in ghettos in the central cities because most public housing is concentrated in these areas. Grants to local authorities for slum clearance may have reduced the supply of low cost housing available to the poor and to racial minorities because more units were destroyed than rebuilt, and few displaced people have been able to find public housing.

Building and housing codes have also contributed to the confinement of the poor in the inner city. Federal building codes have prevented the construction of new, low cost housing in the suburbs, forcing the poor to occupy older, cheaper housing, most of which is located in the central city.

Highway construction has been a major stimulant to suburban development. Older, more densely populated cities have been less able to adapt to the transition from public to private commuting.

Mass transportation programs have concentrated their influence in a few large cities. The extent to which they facilitate central city development rather than simply speed the decentralization process is unknown. UMTA operating grants tend to favor the transit systems of smaller cities.

Little is known concerning the influence of federal policies on amenities. There have been significant reductions in air pollution levels, which may have led to a loss in central city jobs, but they may also make the city a more attractive place to live in.

Residential suburbanization has been reinforced by the suburbanization of jobs. The major federal influence on the latter has been through highways, transportation regulation, and the business tax structure.

The federal government has formulated policies designed to reduce segregation both in employment and in residential location. How effective anti-redlining legislation has been in stimulating the flow of mortgage funds to poor neighborhoods remains to be been. Attempts to integrate schooling through forced busing have actually exacerbated segregation by precipitating the flight of white households to suburban areas. Understanding how widespread and long lasting this effect is must await the result of more detailed and careful analysis.

IX. OVERVIEW AND CONCLUSIONS

Two recent trends in the distribution of population stand out: the movement of people away from large cities in the North toward smaller cities in the South and West and the movement of people out of central cities to suburbs or even to nonmetropolitan areas. These movements have been highly selective—the flows contain a disproportionately large share of high income white households. The result is that cities facing shrinking populations and declining employment are also confronted with a population that is increasingly composed of poor, minority households. The strains that these changes have imposed on cities have made the issue of population distribution a federal problem.

These trends are not generally the result of federal policies. The rapid increase in automobile ownership since World War II, rising incomes, changing tastes, and technological change have played a major role in shifting regional advantage and in altered locational preferences. However, federal policies, taken together, have accelerated these trends, contributing to interarea migration, suburbanization, and political and social segregation.

Summarizing the influences on urban population and residential location of the broad array of federal policies discussed in the previous section presents a number of difficulties. First, convincing evidence is hard to find. Second, studies have not assessed the relative importance of different federal programs and policies or how such policies may act together to create an effect that is greater than the sum of the parts. Finally, the process of demographic change is complex, and measuring the relative contribution of location determining factors is difficult.

Empirical research on federal policy influences is lacking because federal urban policy has not traditionally been viewed as the aggregate of numerous programs and policies but in terms of specific and often quite small programs, such as Model Cities and community development grants. Federal concern has concentrated on small segments of the urban population; less attention has been devoted to the growth and distribution of the whole urban population among areas within the United States. The failure of central cities to benefit from the period of prolonged growth during the 1960s and the rapid urban employment loss during the early 1970s have prompted a new look at the structure of federal policies and their effects on the urban problem.

A second reason why little is known about the influence of federal policies is that it is very often the inadvertent result of actions aimed at solving specific economic and social goals. For example, mortgage guarantees were undertaken to increase the rate of homeownership; little attention was given to the likely locational effects. Research has emphasized evaluation of the effectiveness of policies in achieving their direct goals and not their indirect locational effects.

Finally, data necessary to analyze many policies are often not available: The funds for many federal programs flow through state and local governments, and tracing where the funds end up is a difficult task; census data are often inconsistent. The effects of federal programs and regulations can be assessed only if detailed information is available on factors determining residential location at a highly disaggregated geographical level.

CONCLUSIONS

Table 33 summarizes the effects of the federal policies for which there is substantial evidence as to their influence. For other federal policies, even though they may be important, we must await the results of future research. It appears that the most important federal influence has been through housing programs. By subsidizing homeownership through income tax allowances and mortgage guarantees, the federal government has drawn middle and upper income households from the central city to suburbs where land prices have been lower and new units available.

The income tax structure has, until recently, strongly favored investments in new structures rather than rehabilitation of existing ones. Grants to local governments for sewage systems and water treatment plants have subsidized suburban and new city development. At the same time, public housing projects and housing and building code enforcement have maintained those left behind in the older central cities in low income enclaves.

Table 33

SUMMARY OF THE INFLUENCE OF MAJOR FEDERAL POLICIES ON POPULATION AND RESIDENTIAL LOCATION

Policy	Intermetropolitan	Suburbanization	Segregation
Highway construction	Subsidy from Northeast to South. Mountain and West. Favored smaller SMSAs and areas of lower population concentration.	Encouraged reduced residential density and nonmetropolitan growth.	Suburbs open only to those with automobiles.
Mass transit	Favored smaller cities.	Small encouragement to decentralization.	Too small to allow low income suburbanization.
Federal recreation facilities	Concentrated in West and South.	Negligible acreage in inner city.	
Income transfer payments	Reduced incidence of poverty and encouraged migration of aged to Sunbelt.		
Housing policies:			
Tax structure		Encouraged suburbanization and favored new construction.	Led to suburbanization of high and middle income households.
Mortgage guarantees		Encouraged suburbanization and favored new construction.	Led to suburbanization of high and middle income households.
Public housing			Concentrated in inner city.
Building codes			Prevented construction of low cost new housing in suburbs.
Homeownership programs for poor			Concentrated in inner city.
Infrastructure grants	Reduced development costs in growth areas.	Reduced cost of suburban development.	

The Interstate Highway System has played a major role in shaping patterns of residential settlement. Many areas in the South and West were opened up to economic development. Suburbs were extended many miles from the central business district, and even nonmetropolitan areas served by an interstate highway grew in population.

Federal transfer payments have made low income areas more attractive at the expense of growth in some higher income areas. Retired people have become more mobile and have moved to sunbelt states. However, the fragmented welfare system has led to a piling up of the poor in cities that offer high benefits, contributing to social problems and local fiscal strain.

The fight against racial segregation has not proved effective. Although federal aid has increasingly targeted those cities containing disproportionately large shares of the nation's poor, racial and economic disparities between city and suburb remain large.

RESEARCH NEEDS

In spite of these broad conclusions, little is understood about the residential effects of many federal policies. Energy and environmental policies may have a profound effect on residential settlement patterns; clean air may attract people back into cities. Increased energy prices may encourage "reconcentration." Further research should be undertaken.

Our understanding of the forces that have shaped emerging patterns of urban residential settlement—and therefore our ability to anticipate future trends—is limited. On several issues throughout this report, we have recommended further research. These may be divided into a number of major categories.

Intermetropolitan Migration

Future research is needed to determine the importance of labor market characteristics and amenities in determining inmigration and outmigration population flows. Recent research has revealed a number of important insights that should be consolidated in a more general analysis: (1) Amenities affect net migration, but how do they influence gross migration flows and which socioeconomic groups do they affect? (2) Labor market characteristics such as job turnover appear to be more important than raw unemployment rates and income differentials. Research should utilize simultaneous equation models of gross migration flows to determine the relative contribution of labor market conditions and amenities: Which economic sectors are lead sectors? Which follow population growth? Special emphasis should be placed upon examining factors that influence the mobility of the poor because the piling up of these households has contributed to the problems of central cities in the Northeast. Answers to these questions are important to local and regional planning efforts.

Intrametropolitan Population Distribution

Several aspects of intrametropolitan population trends need analysis. First, what factors are influential in attracting middle and upper income households into the central city? How extensive is the process? An extensive survey of areas undergoing "gentrification"—resettlement by the middle class—should be undertaken to determine its extent, what demographic groups are participating, and what factors have encouraged or discouraged the process? Second, what are the consequences of changing demographic trends? How important is black suburbanization and what are its consequences? How are they related to employment growth? What happens to the displaced poor? What are the implications for the fiscal positions of central cities and suburbs? Recent simultaneous equation modeling efforts should be extended to provide an insight into these questions. Third, what effect will the rising price of energy have on the distribution of the urban population? Finally, how important are amenities in the residential location decision? A much broader analysis than has yet been conducted is necessary to provide some guidelines for potentially influential programs such as the provision of recreational open space and abatement of noise and air pollution.

Segregation

The growing economic and social segregation between city and suburbs merits urgent research. What are the barriers to suburbanization of minorities and low income groups? Are jurisdictional boundaries effective constraints, or is the concentration of the poor in central cities a result of high suburban housing prices, the lack of low skilled jobs in the suburbs, or other factors? Second, how effective are federal policies—laws against redlining, the allocation of Community Development Block Grants, Section 8 Housing and School Integration—in reducing barriers to integration?

Further research in these three areas is important if urban policies are to be developed that effectively tackle the problems currently faced by many urban jurisdictions.

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INDEX

Abandonment, 81, 89-90
Accessibility, 52-61, 86, 93-98
Air pollution, 67-68, 98, 99-100
Airport noise, 65-66
Annexation, 46
Assessment (see Taxes)
Automobile, 56-57, 68, 94 (see also Accessibility)

Building codes, 93

Civil rights, 104-105
Climate, 22, 33
Commuting, 52, 53, 59 (see also Accessibility)
Corps of Engineers, 36, 42
Crime, 70-71, 100-101
Culture, 72, 101-102

Density, 44, 57, 64, 68
Department of Defense, 43
Depreciation allowances, 87-88
Desegregation, 106
Diversity, 72-73, 101-102

Economic development
    and federal policies, 35-36, 98
    and intracity location, 52, 59
    and migration, 24, 28-29
Education
    busing, 105-106
    financing, 73-75
    and migration, 27
    and property values, 77-78
Energy costs, 37, 97
Environmental protection, 42, 97-98

Federal grants to local governments, 39-40, 102-103
Federal mandates, 103
FHA, 87, 89
Fiscal condition
    central city and suburb, 48
    and federal grants, 103
    and location, 73-75
    and migration, 31ff

GNMA, 88-89
Gravity model of migration, 24

Highways, 36, 53, 65, 94-95
Homeownership subsidies, 85-93
Household formation, 14
Housing
    consumption land taxes, 77-78
    cost, 53-54
    investment and taxes, 79
    low income housing, 81

Income (see also Poverty)
    and homeownership, 88-89
    and location, 54-55, 57, 61-62
    and migration, 27, 29ff
    and recreation, 70, 73
    by region, 15
Income tax, 86-87
Intervening opportunity model of migration, 25
Investment, 79-80

Jurisdictional boundaries
    and migration, 7
    and suburbanization, 74-75

Law Enforcement Assistance Administration, 101

Mass transit, 95-96
Mortgage market policies, 88
Migration
    benefits and costs, 22ff
    by region, 16
    between cities, suburbs, and nonmetropolitan areas, 19
    decision process, 23
    gross and net flows, 21ff
    jobs and people, 24, 28ff
    models, 24ff
    theory, 21ff

National Endowment for the Humanities, 101
Neighborhood stability, 80
Noise, 62, 64-65

Police, 71, 75 (see also Crime)
Population growth
    nationally, 14
    regionally, 15-16, 46
    size of urban area, 16-17
    nonmetropolitan, 18-19
    suburbs, 44-49
Poverty, 7, 38-39
    city and suburb, 46-47
    by region, 16
    housing program, 89-91
Probabilistic and Stochastic Models of Migration, 26

Property values
  gradient, 56
  and air pollution, 67
  and crime, 71
  and location, 61-62
  and noise, 64
  and parks, 70
  and public services and taxes, 75-77
  theoretical determination, 55
Public housing, 91
Public safety (see Crime)
Public services, 73-75

Quiet (see Noise)

Race
  central city and suburb, 77
  and crime, 71
  and federal policies, 101
  and migration, 15, 27
Recreation
  and location, 68-69
  and migration, 42
  federal programs, 101
Regulation, 37, 103-104
Rents, 74-78
Rent supplement grants, 90-91
Sewage and water facilities, 91

Taxes
  assessment, 74-75
  federal tax structure, 36-37
  and housing, 85-88
  and location, 73-75
  and migration, 32-33
Tax exempt bonds, 88
Tiebout hypothesis, 74

Urban Mass Transit Administration, 95
Urban redevelopment, 92

Veterans Administration, 87, 89

Water quality, 100
Welfare
  federal contributions, 38, 48
  and migration, 31, 38-39

Zoning, 76